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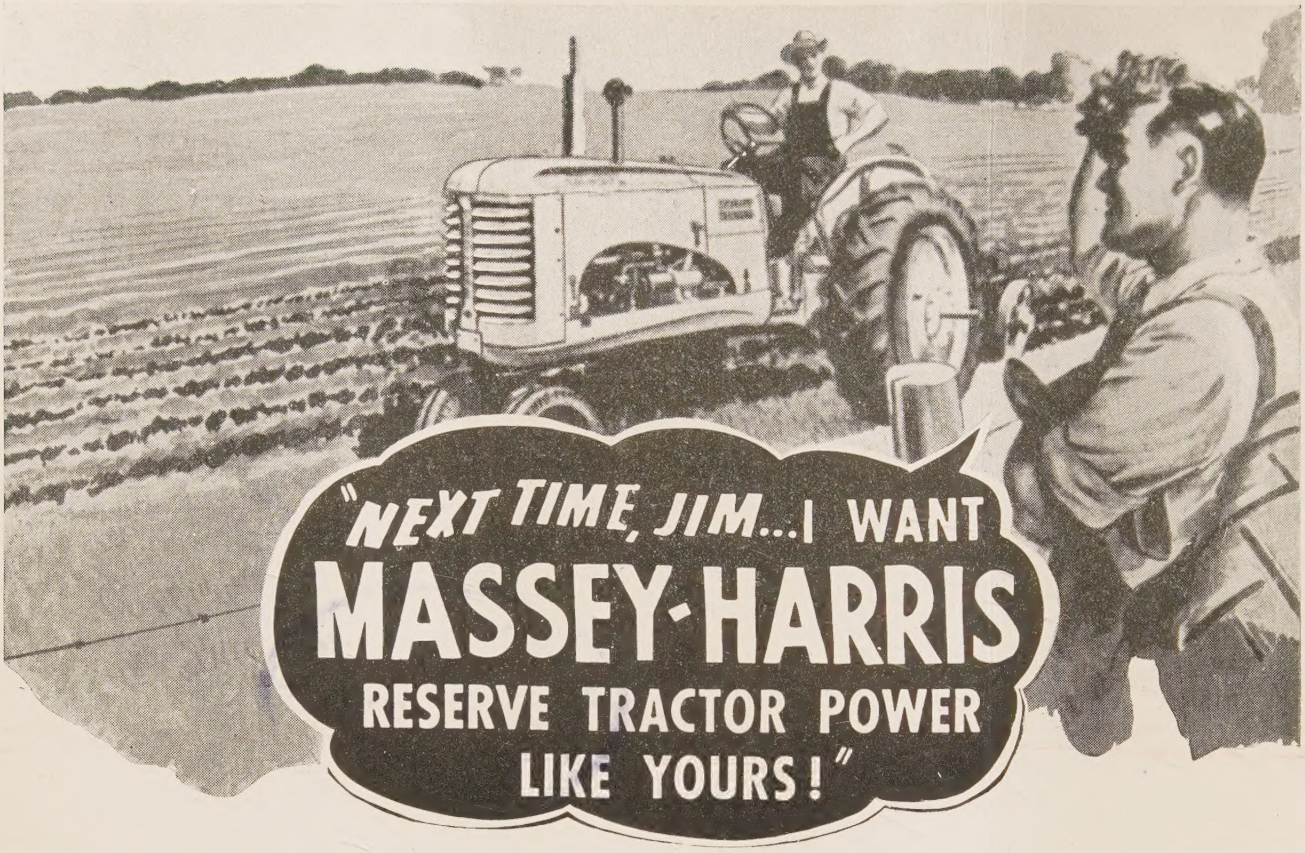

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THE NEW ZEALAND

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Published by direction of Hon. B. Roberts, Minister of Agriculture.

FOOD PRODUCTION DRIVE

Minister Announces 1944-45 District Objectives

Increased crops are aimed at in the district objectives for 1944-45 fixed by the Department of Agriculture and the National Council of Primary Production to assist farmers to plan for maximum production. In announcing these objectives the Minister of Agriculture (the Hon. B. Roberts) stated that it was not intended that farmers should jump from one crop to another, but rather that they should endeavour to intensify and increase the production of the commodities they were accustomed to growing.

Mr. Roberts said he had personally met all the South Island district primary production councils, and also a group in Palmerston North representing some of the North Island councils. It was his intention to meet the remaining North Island councils as soon as possible, specially in the Gisborne and Whakatane districts, where there had been floods.

The New Zealand onion crop in 1943-44 came from 1000 acres, which produced well below requirements, but the target for the 1944-45 season has been fixed at 2000 acres. Onions are grown in three main farming districts —Pukekohe, Marshlands, and Shannon. It is not proposed to make any specific district allocation for this crop, but to make a general appeal for increased production by farmers and market gardeners who may be in a position to increase onion production. The acreage sown in onions in the Manawatu last season was approximately 280 acres, that in the Pukekohe district 400 acres, and that in North Canterbury 350 acres.

MALTING BARLEY AND PEAS.

The cropping programme provides for an increase of 8000 acres of malting barley from 30,000 acres last season to 38,000 in the coming season, based on 35 bushels an acre. The proposed distribution in acres for the 1944-45 season is as follows, the past season's acreage threshed being shown in parentheses:—Marlborough, 4,350 acres (3,858); Nelson, 1,500 acres (1,410); Canterbury, 25,100 acres (22,257); Otago, 6,500 acres (5,924); Southland, 550 acres (300).

It is hoped to maintain the present acreage of 35,000 acres of peas, which are an important commodity in the food requirements of the United Nations. Of last season's production of peas nearly two-thirds came from Canterbury, where 21,500 acres were grown. The district with the largest yield was Marlborough with 9000 acres. Otago grew 2100 acres, Nelson 750 acres, Wellington 700 acres, and Hawke's Bay 600 acres.

TABLE POTATOES.

To produce the 150,000 tons of table potatoes required it will be necessary to sow 37,500 acres of this crop, this representing an increase of 10,500 acres on the past season. The district targets for potatoes in acres are as follows:—North Canterbury, 13,700; South Canterbury, 6,600; Ashburton, 2,200; Rangitikei, 1,850; Otago, 1,900; Southland, 1,900; North Auckland, 1,750; Manawatu, 1,700; Hawke's Bay, 1,100; North Otago, 1,000; South Auckland, 925; Nelson, 850; Ohakune, 500; Wairarapa, 500; Marlborough, 500; Gisborne, 325; Taranaki, 200.

WHEAT ACREAGE.

The 1944-45 production aim for wheat has been fixed at 300,000 acres, last season's acreage being approximately 249,000 acres. The Wairarapa target has been fixed at 4,000 acres, as compared with last season's 3,729 acres. Targets for other districts in the North Island and Nelson and Marlborough are as follows, last season's production being given in parentheses:—Hawke's Bay, 3,500 acres (3,120); Wanganui, 3,500 acres (3,450); Manawatu, 3,500 acres (3,324); Nelson, 1,500 acres (1,355); Marlborough, 12,000 acres (11,393).

The estimated acreage required to produce next season's linen flax crop is 20,681 acres. All the linen flax factories are in the South Island, and the allocation to the Blenheim factory district is 1,808 acres.

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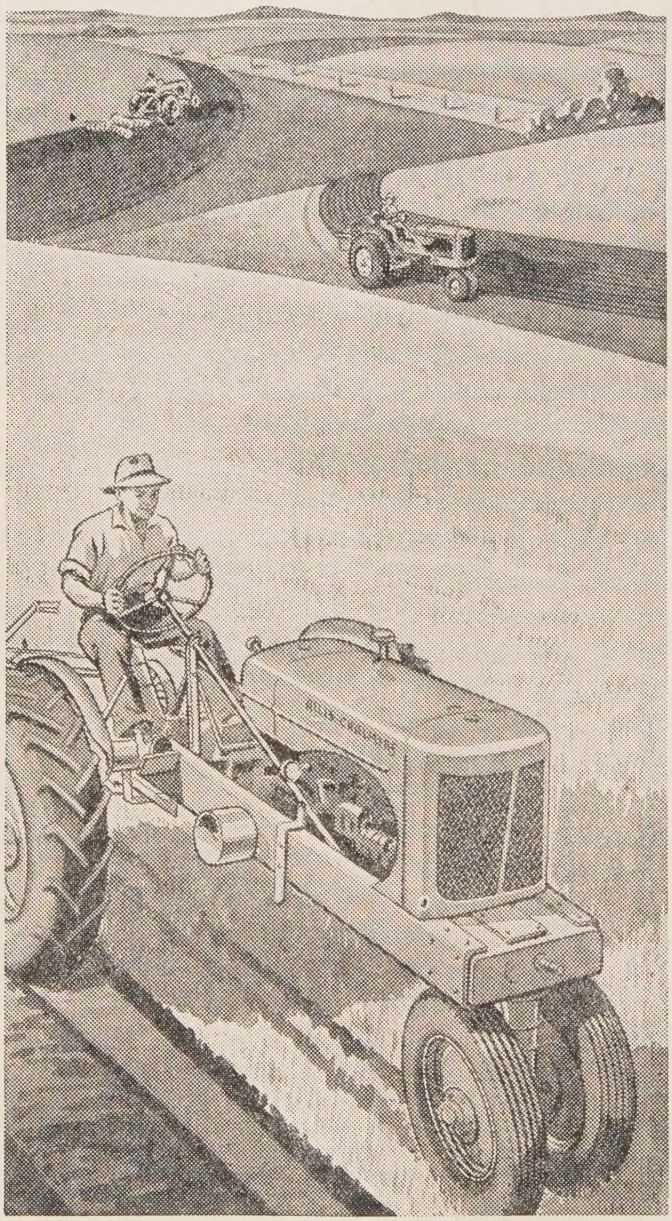

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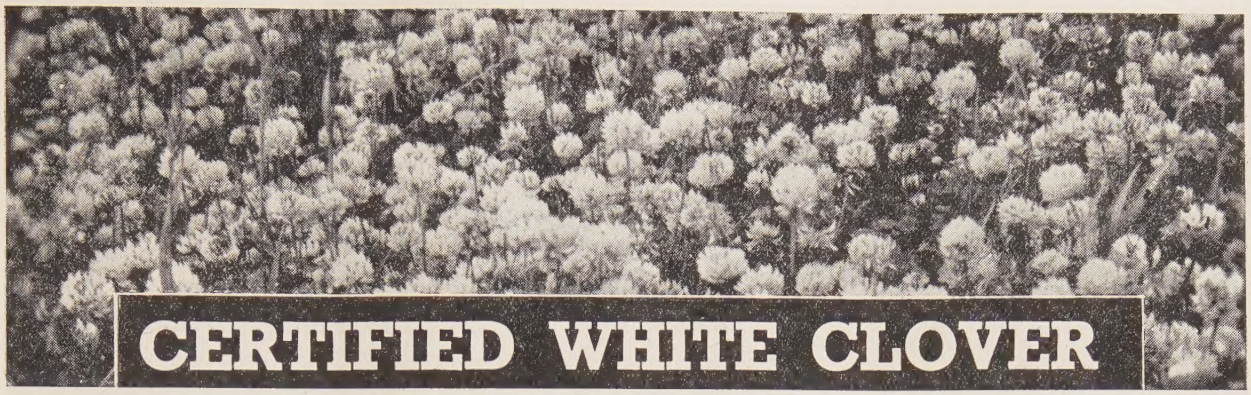


CERTIFIED WHITE CLOVER

Value as Pasture Species and Possibilities as Seed Crop in Ashburton County

Most farming districts in New Zealand have a more or less standard grass mixture suited to the soil and climatic conditions and also the system of farming. On the wheat areas of Mid-Canterbury for many years now the standard grass mixture for grazing purposes has been a bushel to a bushel and a half of perennial ryegrass and 3 to 4 lb. of broad red clover per acre. To have stood the test of time for so long such a mixture must surely possess some very desirable features.

— By —

G. K. McPHERSON,
Instructor in Agriculture,
Ashburton.

IN the first place, under the system of farming whereby most of the pastures are sown down with a cover crop, perennial ryegrass and red clover are perhaps the two pasture species best suited to survive under competition from the cover crop. Secondly, where the pasture mixture is sown down in the cover crop, particularly if it is autumn-sown wheat, the seedbed at the time of sowing the grass mixture may be far from ideal and under such conditions of sowing the ryegrass-red clover mixture would appear to stand the best chance of striking and of ultimately forming a reasonably good sward. In the third place both ryegrass and red clover are harvested for seed in fairly substantial quantities throughout the county, and the fact that these seeds are available on the spot, so to speak, has undoubtedly contributed to their popularity as pasture species for grazing purposes.

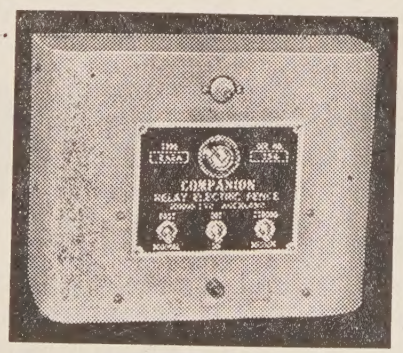
Previously Neglected

In past years white clover seems to have occupied a very minor place in the grassland economy of Mid-Canterbury. Some farmers have sown the ordinary volunteer white clover, generally with indifferent results. Others again have considered it unnecessary to include white clover in the pasture mixture as volunteer white is already present in the soil and this will form a component of the sward whenever conditions suit. Possibly, however, the main reason for the very restricted use of white clover, on the better class wheat land particularly, lies in the fact that the possibilities of certified white clover as a valuable constituent of the grasslands of the county, both from the grazing aspect and as a valuable soil improver, and its possibilities also as a remunerative seed crop have not been sufficiently well demonstrated to the farmer.

The introduction of certified white clover several years ago undoubtedly stimulated the use of white clover in pasture mixtures, and during the past few years white clover has been sown in various parts of the county with, generally, very satisfactory results. It would probably not be over-stressing the position to say that included amongst the most productive pastures in the county today are those sown with certified white clover in association with perennial ryegrass. The introduction of certified white clover has also stimulated the production of white clover seed. In the 1941-42 season, for example, approximately 58,000lb. of white clover seed were entered for certification in the Ashburton County. In the following season the corresponding figure was 154,000lb., a substantial increase. Actually, however, very few farmers have grown white clover for seed. There is, nevertheless, ample scope for its production, as the county possesses many acres of land suitable for growing white clover and a climate equal to any in New Zealand for harvesting the crop.

Outstanding Yield

The experience of Mr. R. J. Low, Highbank, Mid-Canterbury, would seem to demonstrate the possibilities of white clover as a seed crop on some of the better-class land in the county. Mr. Low in his first year as a grower produced the exceptionally fine yield of almost three sacks of machine-dressed seed per acre. The actual figures are



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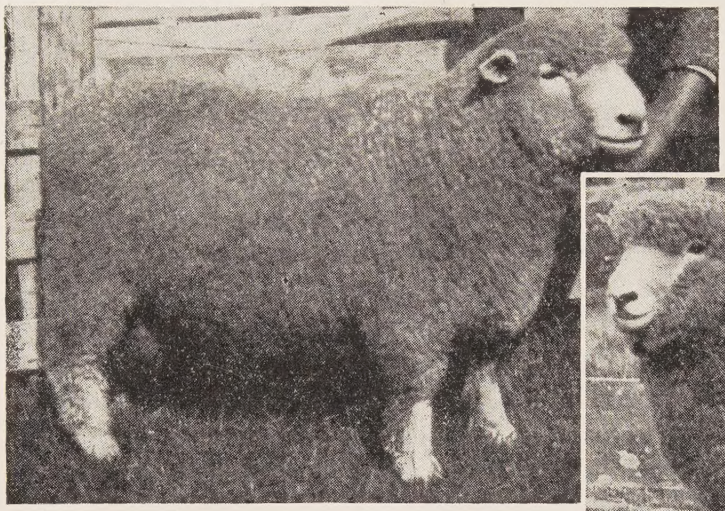
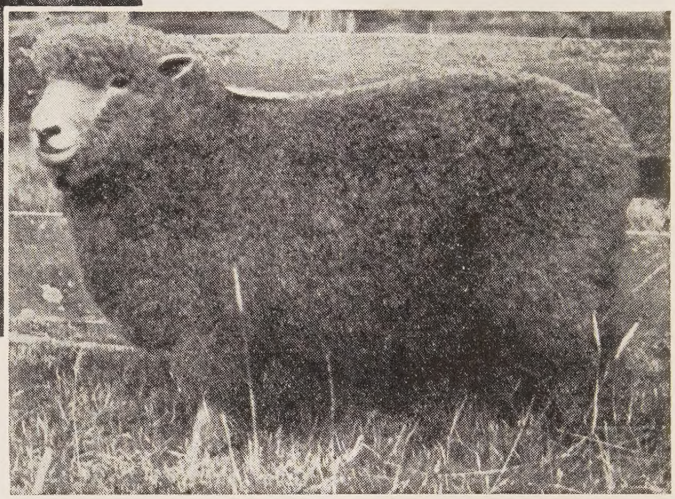


(Left): First Prize open shorn Romney Ram Hogget, Poverty Bay Show, 1943. Property of MR. A. KIRKPATRICK, Patutahi.



(Right): Stud Romney 2-tooth Ram, sold for 200 guineas at the 1944 Manawatu and West Coast Stud Sheep Sale. Bred by MR. T. E. CRAINE, Kiwitea, Feilding.

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FACTORIES AT PALMERSTON NORTH, CHRISTCHURCH AND TE AWAMUTU.

that 13.2 acres produced 7269lb. of machine-dressed seed or a return of 550lb. per acre. Mr. Low's method of establishing and harvesting the crop may be of interest to readers. The paddock was ploughed out of grass and sown in turnips. Then followed a crop of wheat. In the late autumn the wheat stubble was ploughed and the paddock left in the fallow all winter. After suitable cultivation it was then sown in linen flax about the middle of October. First of all the linen flax seed was drilled and the area then rolled. The paddock was then cross-drilled on the rolled surface with 3lb. per acre of certified pedigree white clover seed, the seed being mixed with equal quantities of super and carbonate of lime and drilled through the manure box of the drill at the rate of 2cwt of the mixture per acre.

When the flax was harvested (February, 1943) it was seen that a good strike of white clover had been obtained, and although growth naturally was short, it was not long before all evidence of drilling the crop had disappeared. As soon as the area was fit to graze it was stocked with sheep at intervals as required, but was never grazed too bare. During August, 1943, carbonate of lime was applied on the clover sward at the rate of 1 ton per acre. Previously when the area was in grass 30cwt. of lime per acre had been sown in two applications so that within the last eight years in all 2½ tons per acre of lime had been applied to the area. About the middle of October the area was topped and then let go for a seed crop. Relatively dry conditions continued throughout November and December and during this period the clover flowered profusely, and with the bees working considerably in excess of a 40-hour week there were very few heads devoid of seed.

Harvesting the Seed

Towards the middle of January the area was mown with a 4ft. 6in. cutter bar power mower, left in the windrow for almost a week, and then picked up and threshed with a header harvester fitted with a 5ft. pick-up which made an excellent job of threshing the seed. The seed from the header was placed in sacks containing 20-30lb. seed each, these being hung on a fence for nearly a week to make certain that the condition of the seed was right; then it was placed in full-sized sacks.

Apart from the heavy seed yield per acre perhaps the most interesting feature of this crop was the fact that the clover seed was sown by itself, no ryegrass being included. Mr. Low states that he had no difficulty in cutting the crop with the power mower. Further there was sufficient bulk of material in the windrow to enable the header pick-up to operate successfully. Very few heads dropped into the stubble and escaped the pick-up.

Threshing the crop of a pure white clover sward. Note the amount of material in the windrow.

Mr. Low's experience does demonstrate the possibilities of white clover as a seed crop on much of the better-class land in the Ashburton County. It is not suggested that results comparable to the one he obtained would be common. It is well known that white clover can be a very tricky crop to harvest, the yield being influenced to a great extent by the weather conditions during the flowering period of the clover and whilst the crop is being harvested. It must be borne in mind, however, that a white clover sward may be grazed at intervals for approximately seven months in the year, and when this fact is taken into consideration a yield varying between half a bag and a bag to the acre must be considered satisfactory. There is the added value also that white clover assists in building up the fertility of the soil for the crops which follow when the area is again brought into cultivation.

Experience over the past few years suggests that certified white clover offers tremendous possibilities as a pasture grazing species, as a valuable seed crop, and also as a soil improver, particularly on much of the land in the county which will in a normal season produce 35 bushels of wheat or better per acre. Indiscriminate sowing of the seed, however, will invariably lead to disappointing results. Sowing on a fallowed surface and preferably one which has received an application of lime seems essential if success is to be achieved.

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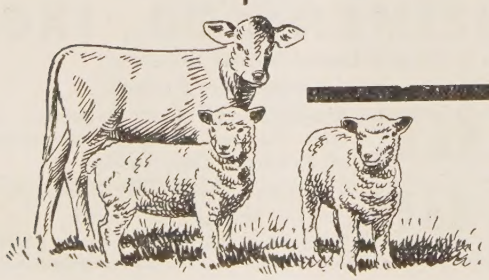

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CONCRETE CULVERTS

THERE are few farms which do not have at least some open drains or small streams, and on many there are a considerable number over which good permanent crossings are essential for the efficient working of the farm. Every farmer knows to his cost the manifold deficiencies of the common pattern of wooden crossing, and just as concrete is replacing timber in bridge construction on the roads, so are its very real advantages becoming apparent for crossings on the farm.

Under ordinary farm conditions, the crossing may be constructed from a number of concrete pipes, or it may take the form of a miniature arched

— By —

P. S. SYME,
Instructor in Agriculture,
Warkworth.

bridge. Both types are easy to construct, and both will carry heavy loads. From the viewpoint of general adaptability and utility, the pipe type is probably best suited for the average farm, and it can be particularly recommended where extensive subdivision entails the provision of a considerable number of water troughs. If a good supply of these home-made pipes are on hand, they can be readily used for culverts or can be easily converted into useful drinking troughs wherever they are required.

The farm owned by Messrs. Barr Bros. at Glorit, like many farms in the north, is intersected by numerous large open drains, and in order to provide safe and convenient access to the various fields, good, wide crossings are necessary. Although improvised wooden crossings had served as a makeshift in the past, frequent trouble and inconvenience resulted when heavy loads of fertiliser had to be transported for topdressing. To avoid further trouble, Messrs. Barr decided that wherever an old crossing was in need of repair or a new one was being constructed the work would in future be done in concrete. They decided, also, that for conditions on their farm the most satisfactory solution would be achieved by some simple method of manufacturing plenty of cheap, standardised concrete pipes of a size which would be generally best suited to their average size of drain.

Mould Described

After some consideration they designed a mould as illustrated. The mould is constructed of heavy gauge galvanised sheet iron. The ends of the outside mould are fitted with angle irons, which are easily bolted together when erecting the mould. In order to facilitate the detachment of the inner section of the mould, the two ends are simply held in position by a number of small bifurcated rivets, which are inserted through registering nail holes, with their open ends pointing to the centre. In this way the inner section can be easily uncoupled and withdrawn by merely pinching the exposed ends of the rivets. In order to insure complete rigidity, a cross-piece of wood with a saw cut 3 inches from the end of each arm is fitted over the top of the mould, the inner rim of which fits into the saw cuts.

The mould itself rests on a circular foundation of wood, which is nailed to a wooden platform, and which acts as a distance piece for the bottom of the mould. Where a special heavy gauge steel mould is used, these distance pieces are not required. Such a mould, however, is rather expensive, and its cost might not be warranted unless it is intended to manufacture a very large number of pipes.

As designed by Messrs. Barr, the mould produces pipes with an inside diameter of 3 ft. and with 3-inch walls. It can be used to turn out pipes 3 ft. long, but as these are rather heavy to handle, only 2 ft. pipes have so far been made.

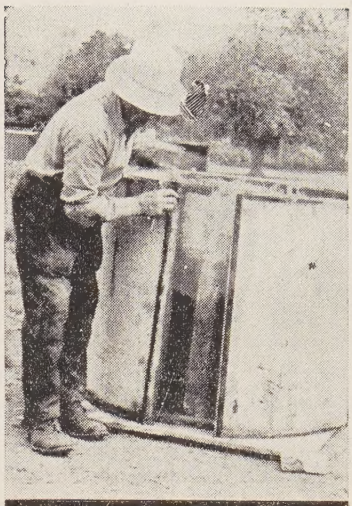
Filling the Mould

As the culverts may have to carry very heavy loads, the material used in the aggregate must be of good quality. The mixture should be filled in slowly enough to allow very thorough ramming. This is important to insure good, strong, clean pipes. The pipe should not be removed until at least five days after casting, and some care must be taken when moving it off the base-board on to its side. Before doing this, a rolled up sack or a bundle of hay should be pushed close against the bottom of the pipe to act as a cushion and to distribute the weight as the pipe is gradually being tilted over on to its side. With reasonable care, there is little risk of breakage.

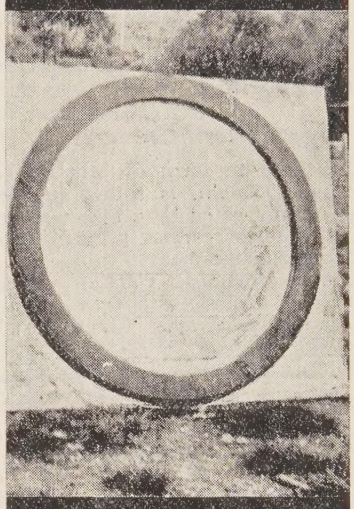
Constructing the Culvert

The number of pipes required for each culvert depends on circumstances. For general convenience, however, both for stock and implements, ample width—say about 12 ft.—should be allowed.

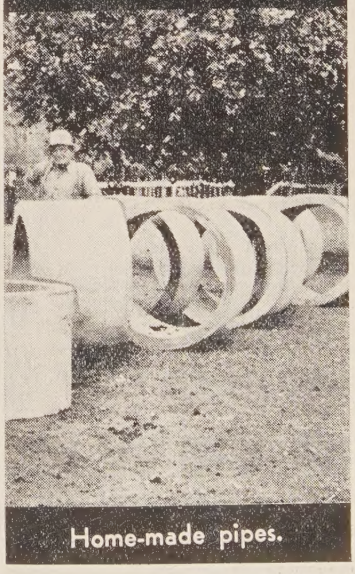
In placing the pipes in the culvert, sufficient room should be left to ram the soil—preferably clay—completely



Concrete pipe mould.



Foundation for pipe mould.



Home-made pipes.

Mould for culvert. Concrete bridge. Drain and miniature bridge.

round each pipe if possible. This is particularly important if the culvert is intended to carry heavy loads. The pipes can be easily and safely lowered into position by means of a rope used in the same way as for rolling heavy casks from a wagon.

The job should be finished off with a minimum of 6 inches of well-packed soil above the pipe. The sides may be finished with stone "facings" to retain the earth.

Bridge Pattern Culverts

Part of the farm of Mr. W. L. J. McLean, Kanohi, is rather low lying and is intersected by a big open drain. As this drain carries a large volume of water after heavy rains, the old wooden crossings were a constant source of trouble and were often entirely carried away. Taught by bitter experience, Mr. McLean decided to build crossings of concrete which would be strong enough to carry a very heavy load.

As will be seen from the illustration, the mould used is of quite simple construction. The inner decking is constructed of eighteen 4 in. x 4 in. boards each 12 ft. long. These are fitted on to the inside ridge on each end-piece, and are supported by two arches towards the middle. The curved length of the inside of the arch is 6 ft. long, and the vertical height of the arch is 18 inches at the centre. The mould casings are 3 in. apart.

Construction of Bridge

Before filling in the concrete, the complete lower decking is first placed in position. One plank of the outer casing of 4 in. x 4 in. timber is then laid along the bottom of each side and nailed at each end to prevent bulging. When this space has been filled with concrete another plank of casing is laid, and so the work proceeds from the two outsides to finish at the top centre of the arch. It will be noted that provision is made for a ledge at each side, and that this ledge rests on the hard subsoil. The recess for this ledge is prepared when erecting the mould over the drain, and acts as a portion of the mould.

The mixture used for the concrete comprised 4 parts of blue metal chips and 2 parts of sand to 1 part of cement. Although no reinforcing has been used, the design of the bridge contributes to its strength, and it has carried loads of over 4 tons with safety.

The new bridges constructed by Mr. McLean have been subjected to some very heavy floods, but they have easily withstood every test. He can now cross with a fully-loaded truck without anxiety, and no longer worries in the event of heavy rains.

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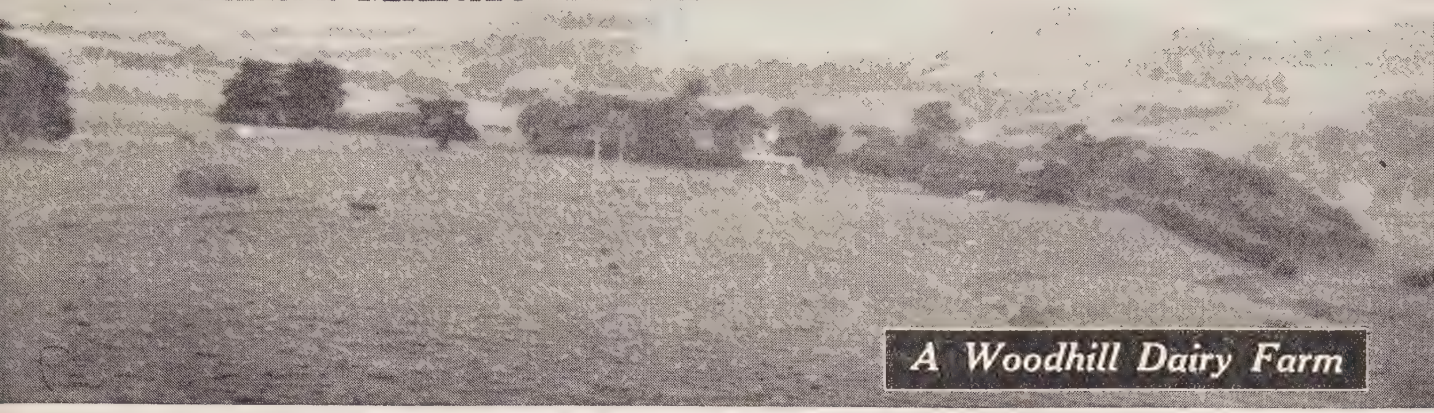
STUDIES IN FARM MANAGEMENT



A Woodhill Dairy Farm

THAT industry, thrift, and enterprise have proved a good substitute for capital in developing into an economic holding what was a few years ago land in desperately poor condition is illustrated in this article on a dairy farm at Woodhill, Waitemata County.

— By —

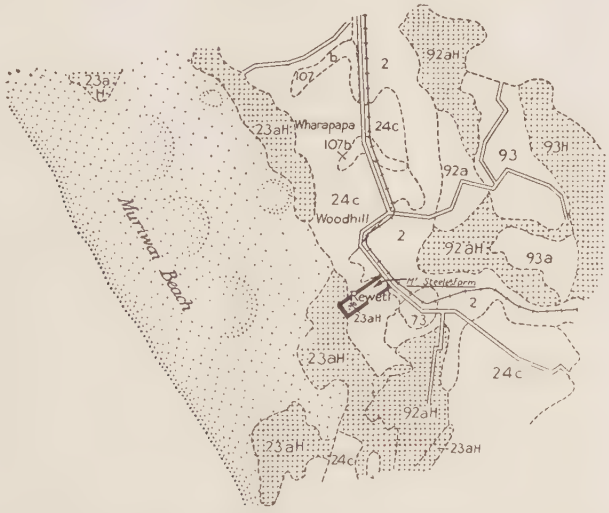
P. S. SYME,

Instructor in Agriculture,

Warkworth.

THE topography of the Waitemata County for the most part is rugged and much of it consists of hilly country ranging from about 300 ft. to 1000 ft. in height. The county, however, is intersected by numerous valleys, and there are considerable areas where the land is comparatively level or gently undulating.

The soils over the greater part of the county consist of heavy clays ranging from immature to semi- and submature podsols. Most of these soils are deficient in humus, lime, and phosphate, and are rather difficult to work. Towards the west coast, ranging from South Head down towards Kumeu, there is a strip of light, sandy country. The sand rests on a heavy clay and varies in places from a covering of about a foot to a considerable depth. In some parts the sand is still loose, but by far the greater portion has become consolidated, much of it being steeply undulating or rugged. A considerable area in the Silverdale-Dairy Flat district overlies a limestone formation and is inclined to lie very wet in the winter months. Each of the different soil types mentioned provides special problems in management, but with suitable treatment all can be made to carry good pastures where the land is not too broken.



Soil map of Woodhill district showing situation of Mr. Steele's farm. 23aH—Pinaki sands, formed from dunes. Profile 5-9 in. dark grey free sand resting on light brown free sand. Topography moderately steep. 24c—Red Hill sandy clay loam, derived from weathered sand and pumice. Profile 4-9 in. blackish brown sandy clay loam with manganese concretions resting on orange brown compact clay. Easy to rolling. 2—Wet meadow soils, drained.

With a well-distributed rainfall of about 50 in. and a mean temperature of about 56 deg. Fah., the climate is ideally suited for pasture growth, and this in large measure compensates for any deficiencies in the natural soil fertility. The comparatively mild winter permits of a long period of ryegrass and clover growth, while the warm temperature encourages the vigorous growth of paspalum throughout the summer months.

Farming is the main industry in the county, dairying being practised on the easier country and sheep farming where the land is steeper or where access is difficult. Towards the southern boundary adjoining the Auckland suburbs much of the land is held in small blocks and is devoted to fruit-growing or to a combination of dairy, fruit and poultry farming. The typical dairying pasture consists mainly of ryegrass-cocksfoot-dogstail-white clover during the autumn, winter and spring months, with paspalum dominant in the summer. Browntop is often prevalent and tends to come in naturally where the fertility is low. The worst weed pests, which vary with the district, are gorse, blackberry, manuka, rushes and fern.

With improved road access permitting the increased use of phosphates and lime, there is ample scope for im-

provement in the farm pastures, and there is no room to doubt that the production from the county can be very considerably augmented in the future.

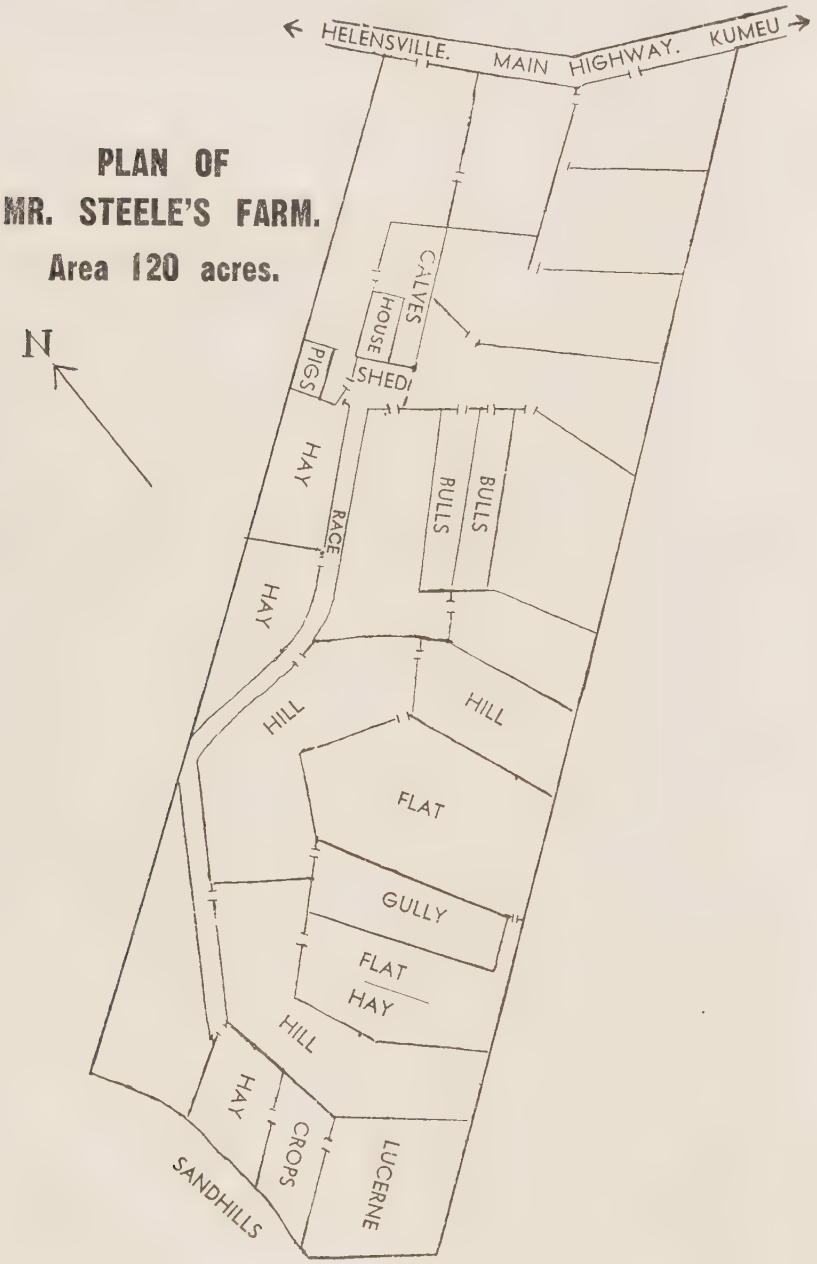
CROPS, PASTURES AND LIVESTOCK—WAITEMATA COUNTY, 1941-42.

Annual crops	794	acres
Pasture	128,704	"
Pasture cut for hay and silage	7,180	"
Dairy cows in milk	33,358	
Other cattle	27,852	
Sheep shorn	93,876	
Pigs	14,571	

DEVELOPING A WOODHILL FARM.

That industry, thrift and enterprise now, as in the past, still provide a good substitute for capital is shown by the experience of Mr. D. Steele, Woodhill. Mr. Steele arrived in New Zealand as a youth in 1928 with a capital of £13, and three days later was working on a farm for 25/- a week. Presently he commenced farming on his own account with four cows on a rented property, and by 1938 his herd had risen to 30 cows. By thrift and sheer hard work he had also acquired a modest capital. With these assets, backed by his personal credit, he took over his present farm near Helensville in 1938.

When taken over the farm, which consists of 120 acres, was in desperately poor condition. Much of the land was thickly infested with rushes and blackberry, and the existing pastures consisted mainly of poor, unthrifty paspalum. The property was only partly subdivided and the few fences were in very bad repair. Mr. Steele had very little working capital, his credit was strained to the limit, and prospects appeared somewhat grim. The story of how he developed the property is that of many successful farmers to-day.



On taking over Mr. Steele was confronted with a variety of problems. Some, he decided, were urgent, while others could wait; but the effective answer to all must be hard work.

As will be seen from the sketch plan, the farm is rather long and narrow and consists mainly of a series of terraces and slopes rising from the road entrance to a height of about 300 ft. on the sandhills at the far end. Numerous gullies running over the farm discharge drainage on to the flats, which in consequence were badly infested with rushes. The soil over most of the farm consists of a sandy black loam resting on a heavy clay. Towards the far boundary adjoining the sandhills there is a piece of slightly undulating land of about 8 acres consisting of almost pure, black sand. Strange to say, this has proved the most fertile portion of the farm.

After some careful consideration Mr. Steele decided that the most urgent and profitable work would be to clean up the rushes and blackberry on the easier country where they could best be attacked on a big scale by the use of the mower. In this way and with the help of topdressing he believed he would get the quickest return for the time and labour spent. Where the growth was too dense for mowing he made up his mind to crop the ground or to spade out the rushes—draining if necessary—as opportunity offered. At the beginning, however, his main concern must be to get the quickest and biggest returns possible for the amount of labour expended.

While the early work of pasture improvement was in progress Mr. Steele fully appreciated the crucial importance of good grazing management and the part played by close subdivision. Accordingly the lay-out of the farm received close attention from the very start, and as opportunity permitted existing fields were subdivided or new fields added; not haphazard, but to a carefully prearranged plan. As already mentioned the topography of the farm is very uneven, and it has not been possible to lay out the fields on conventional lines. Nevertheless the work has been done well and the farm is now divided into 23 fields so arranged as to secure convenient working and good grazing control of the pastures. In planning the lay-out provision was also made for watering each field from a central spring by means of an electric pressure outfit. This work entailed the use of 3000 ft. of piping and cost £240 in addition to Mr. Steele's own labour.

Mr. Steele is a firm believer in cropping where this can be done economically. He found that the deep, sandy soil towards the top end of the farm could grow excellent roots, and this portion, about 8 acres, was cropped with potatoes for the early market and turnips for supplementary feed until four years ago, when 2 acres was sown down in lucerne. The lucerne proved so successful that an additional 4 acres was put down in the following two years. Contrary to what might have been expected in a high-rainfall district weed competition has not so far been serious and the original stand is still comparatively weed free and gives promise of a relatively long, useful life. The stand provides four heavy crops each year, the first cut being used for silage and the others mainly for hay.

That the system adopted for dealing with the pastures was a sound one was quickly proved by the gradual disappearance of the blackberry and rushes as well as by the improvement in the composition of the sward. The original poor, weedy paspalum-dominant pastures to-day carry excellent swards of ryegrass-white clover-paspalum. Although the manurial treatment has been adequate, it has certainly not been lavish, and the main credit for the improvement must be ascribed to good management. It is interesting to note that though the sward now contains a high proportion of vigorous ryegrass and white clover, these species must have developed naturally, as surface sowing has not at any time been practised.

Commencing with his herd of 30 Jersey cows brought from his leased property, Mr. Steele has gradually built up his stock until the farm now carries 70 milking cows, 18 heifers, 11 heifer calves, 5 bull calves, 2 bulls, 3 work horses plus a foal and a pony, 5 breeding sows and 1 boar. About 80 pigs are sold off each year. During the first year the production of butterfat amounted to 7000 lb. Now it has risen to 17,000 lb. and is still on the up-grade. Apart from some additional help at haymaking the whole of the work is performed by Mr. Steele himself with the assistance of his wife at milking times.

Management of Pastures

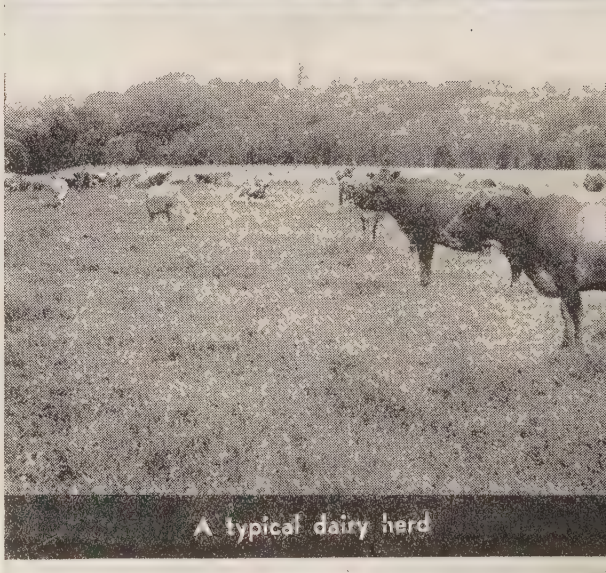
Once the initial work of clearing the rushes and blackberry had got well under way and a start had been made with the subdivision, the work of management gradually developed into a seasonal routine. In the autumn certain selected fields are grazed down early and are then well harrowed and topdressed to encourage autumn and winter growth. The balance of the farm is topdressed later in the season when the growth has been eaten down and the land well harrowed. The topdressing has never been particularly lavish, and basically consisted of about 3 cwt. super and 3 cwt. of ground limestone per acre. Although the soil is of a sandy texture, judging by the proportion and vigour of the clover elements there appears to be no deficiency of potash, and the results suggest that the topdressing programme is a sound one. Throughout the season a system of rotational grazing is practised, an effort being made to balance the increasing spring growth by closing selected fields for hay and lengthening the grazing periods.

Mr. Steele believes in ensuring that every animal on the farm is adequately fed, and in addition to the four cuts of the lucerne area he regularly makes about 18 acres of hay each year. In a normal season the pastures are efficiently controlled by the grazing stock, but care is taken to use the mower for topping if the paspalum growth appears likely to get out of hand. Experience has shown that with paspalum the dominant summer grass considerable damage may result to the other species in the sward if the rank growth is not properly controlled. Whenever conditions are favourable the fields are well harrowed to spread the droppings so as to assist in promoting uniform growth and even grazing over each field.

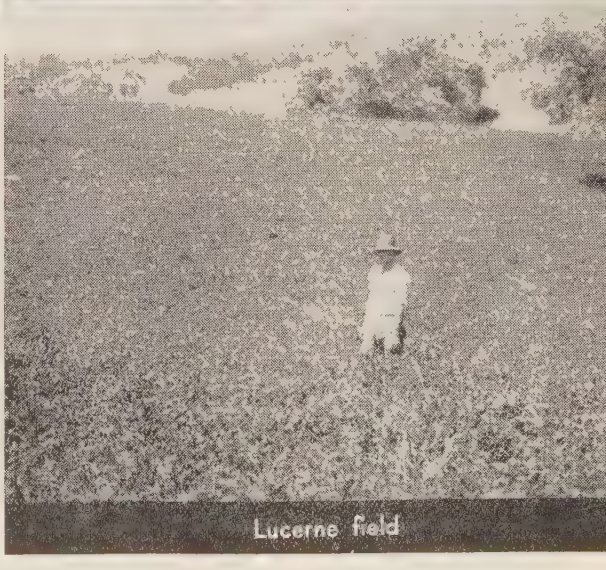
Building Up the Herd

Mr. Steele commenced operations with 30 cows brought from his previous rented farm and a number of purchased heifers. By breeding from a good pedigree bull and his best testing cows he is gradually building up a very useful herd. Losses from disease have so far been comparatively light, and the annual replacement of about 25 per cent. is partly due to the improvement policy

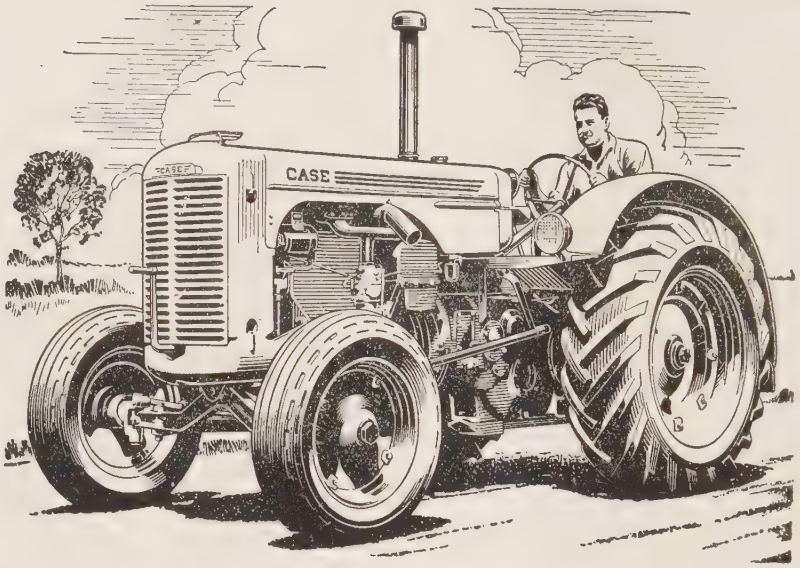
General view of farm



A typical dairy herd



Lucerne field



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of trying to replace the lower producing cows with animals likely to prove better.

The calves bring in about £30 each year, this figure including a few pedigree bull and heifer calves, as well as the bobby calves. As already mentioned, great importance is attached to good feeding **all the time.** With an adequate reserve of supplementary feed Mr. Steele does not hesitate to use plenty whenever it is required. In the event of a dry summer the cows receive silage or green lucerne. In feeding out the lucerne care is taken to see that it has been cut for at least one day in advance, and that the animals do not receive too much.

As the growth begins to fail in the autumn a start is made with feeding roots and hay, this being continued through the winter till about the middle of September, when natural feed is again as a rule fairly plentiful.

Pig Management

Mr. Steele has long been satisfied that if a pig is well cared for it is a good paying guest. Two litters are raised each year from each of the five sows, and go off as porkers or baconers according to circumstances. A few maiden sows are also sold each year for breeding purposes. The litters are raised in separate farrowing pens some distance apart, with a yard for each sow. When three weeks old the piglings begin to receive a small amount of meat meal or barley meal and eventually are weaned by turning the sow out to grass with the boar, where she remains till the approach of the next farrowing. When properly settled down the litter is moved into the main central feeding pens. Each year about 30 pigs are carried over the winter on roots and meal, experience having shown the folly of relying on spring buying. Normally, the pigs bring in about £200 each year, and about £25 is spent on feeding stuffs.

Farm Shelter

Mr. Steele's farm is rather exposed and the first winter convinced him of the need for shelter. The problem, however, was not desperately urgent, and as it would not be immediately remunerative it had to wait until two years ago when a start was made with the planting of 1000 barberry, 1000 boxthorn, and 120 macrocarpa plants. In the following year the programme was continued with the planting of 2000 barberry, 1000 boxthorn, and 50 macrocarpa plants.

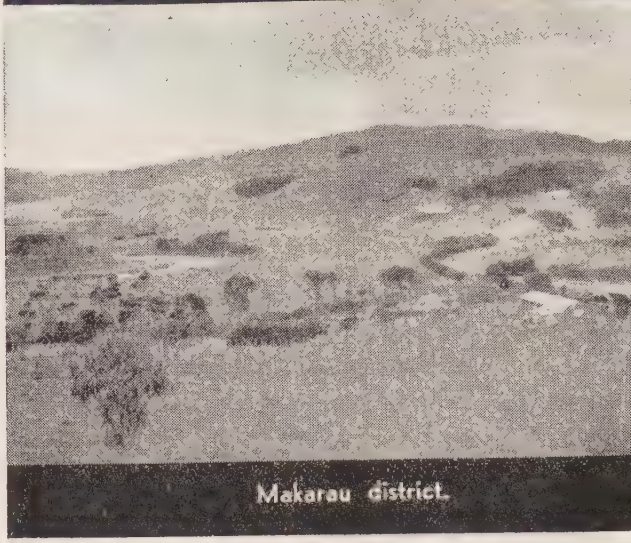
Although the barberry and boxthorn do not succeed well on the commoner gumland soil types, they may be expected to grow to perfection on the light soils comprising Mr. Steele's farm, though there is some risk that the barberry may be adversely affected by salt winds. The fact that they can be safely planted under the fence lines and do not require double fencing also influenced the choice of these species.

In his planting programme Mr. Steele proposes to plant the barberry and boxthorn along the fence lines wherever they can give the best shelter. The macrocarpa trees on the other hand are being planted in blocks mainly on waste ground where they will provide good shelter and will later grow into useful farm timber. The provision of really good shelter is too big a job to be tackled in one season, but by working to a prearranged plan it is hoped ultimately to construct an efficient and attractive series of breakwinds and shelter hedges to protect all the more exposed portions of the property.

In the comparatively short period of six years Mr. Steele has converted what was originally a very poor farm into a highly productive property. Whatever may be said regarding a comparison of the opportunities of the present with those afforded in the past for the young man with little capital, it is evident that energy, determination, and enterprise can still provide a key to success. It all depends upon the man.

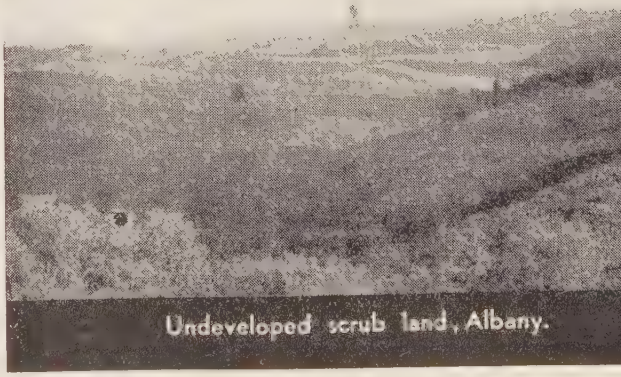
The soil map of the Woodhill district has been provided by courtesy of Soil Survey Branch, Department of Scientific and Industrial Research.

Views of Waitemata County

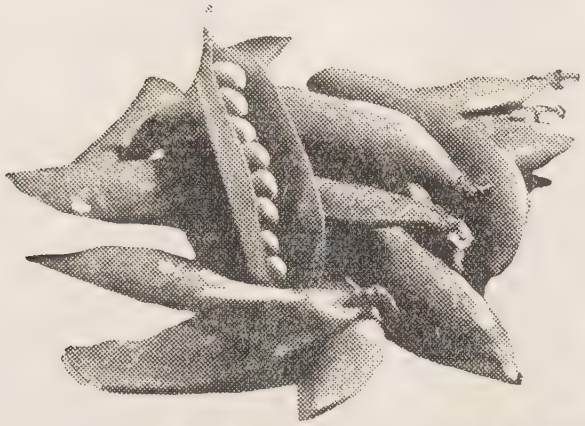


Makarau district.

Alluvial river flat, Helensville.



Undeveloped scrub land, Albany.



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Internal Parasites in Poultry

Mortality and sickness among poultry of all ages due to internal parasites, such as worms, are becoming distressingly common, and greater attention will have to be paid by poultry-keepers to guard against future losses. It would be safe to assume that these parasites infest almost every flock of poultry in the Dominion to a greater or lesser degree, and are more responsible for unthrifty flocks and low egg yields than any other cause.

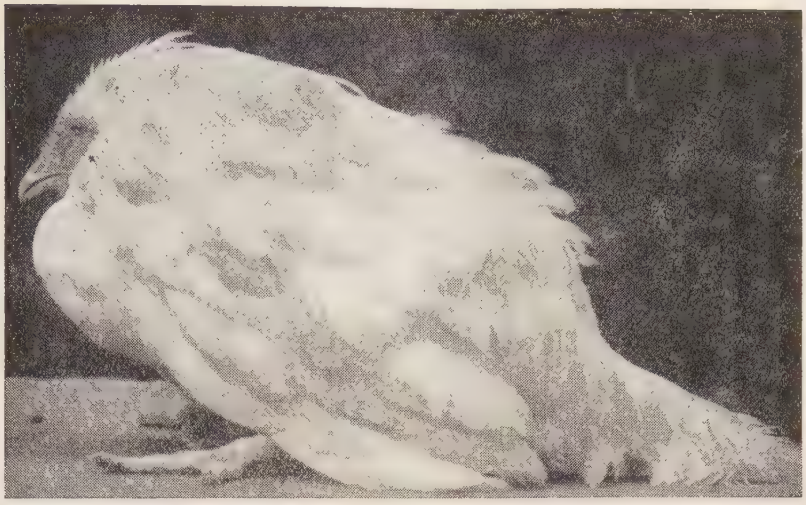

Fig. 1.—Acute parasitic infection in a growing pullet.
[*A. L. Bryant, photo.*

THE danger from a reduction of a bird's vitality and resistance to disease cannot be too strongly emphasised, as there are many troubles among poultry resulting from heavy parasitic infestation. With the introduction of modern methods of keeping larger numbers of birds on limited areas, the chances of these parasites making their appearance in the flock cannot be too seriously considered.

Importance of Cleanliness

The only sound method of dealing with troubles in poultry is to prevent them, and the first essential is to breed and rear stock with strong constitutional vigour and resistance to sickness and disease. Good stock properly housed and well fed is, in general, the most important factor in profitable poultry-keeping, but no matter how good the stock, the housing, or the feeding, the best results will never be obtained unless the poultry-keeper realises the importance of cleanliness. Neglect in this item means that parasitic life is sure to appear sooner or later among the flock. Birds will become affected even on well-managed farms, but under proper conditions such flocks can be easily controlled.

— By —
The Livestock Division

It is always found that the less sanitary the houses and pens, the quicker will parasites make an appearance and the more rapidly will they spread. It is therefore essential to pay strict attention to cleanliness in all things pertaining to the farm, including the feed and water, utensils, houses, and pens. If the ground on which the birds run is allowed to become stale, it will soon become a breeding place for parasites. There is little doubt that fouled ground is the greatest factor in spreading intestinal worms, particularly with young growing stock.

Double runs are always advisable so that the ground can be rested and put under cultivation if necessary. Top-dressing the ground heavily with lime and planting the runs with oats and grass, millet, and rape, etc., are good methods of cleaning the soil of infection, and they also provide a good supply of greenfood and fresh runs for later use. At all times guard against the birds coming in contact with damp ground; dampness on the floors of the houses near the drinking places is always a breeding ground for parasitic life, and this should be prevented.

Shady places in runs where the soil remains damp should always be avoided, as they retain worm eggs for long periods; this is very important on ground where young chickens are being reared. Strict attention to hygiene, the avoidance of overcrowding, and the provision of clean ground for the rearing of young stock will always assist in controlling parasitic infestation.

An additional safeguard against the spreading of parasites is to avoid, at all costs, the practice of running adult stock upon ground used for rearing young birds. The latter are liable to pick up eggs of parasites passed out in the droppings of adult birds.

Types of Worms

There are many varieties of worms which infest poultry, impairing their general health and condition. Some infest the throat, windpipe, and gizzard, but the more common varieties, which probably affect the productivity of the laying fowl most, are those which infest the intestines. They can be classed in two groups—tapeworms

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and roundworms. The tapeworms are flat, tapelike, and segmented, and the roundworms are round, pointed at each end, and unsegmented, being usually greyish-white in colour and varying in size and thickness according to age and variety.

Tapeworms

The tapeworms are found in a number of varieties. Some large ones are 5 or 6 in. long, while others are very small and can be seen only by the aid of the microscope. They attach themselves to the lining of the intestines by means of suckers. The larger varieties are found in the main intestine, and the small ones usually infest the small intestine just below the gizzard. These small varieties are generally most fatal, often completely upsetting the digestive system and finally causing death. New segments continue to form just behind the head, and as the tapeworm grows the end segments containing fertilised eggs are detached and pass away with the excrement of the fowl. These segments are eaten by intermediate hosts—flies, slugs, snails, slaters, and earthworms, etc.—in which the eggs develop to the infectious stage. Birds become infested by eating these hosts containing the developed tapeworm eggs.

The prevention of tapeworms can therefore be controlled to a very great extent if this life cycle can be broken. Intensive housing in well-constructed houses with wooden, asphalt, or concrete floors will often achieve the object.

Roundworms

Roundworms are the most common in all poultry, and while they seldom cause heavy mortality if kept under reasonable control, they are responsible to a very great extent for retarding the growth of young stock. Many young pullets fail to come into profitable egg production in the early autumn each year through being infested with these parasites.

There are a number of varieties of roundworms which affect poultry, but the two which are commonly found are the caecal worm and the large roundworm. The caecal worm, *Heterakis gallinae*, is normally a harmless parasite of fowls, and is found in the caeca or blind gut, from which it takes its name. The treatment given for other worms will usually dispose of a large number of these worms at the same time.

The large roundworm *Ascardia galli* is found in the main intestinal tract in various sizes according to the stage of development, and will be found from 1½ in. to 4 in. in length. The eggs, which cannot be seen with the naked eye, are deposited by the female worm in the intestine and passed out with the excrement. Under favourable conditions of moisture and warmth small worms develop within the eggs in from 10 to 16 days, and if eaten by susceptible birds, the young worm is hatched.

A period of from 50 to 60 days is required for the young worms to reach maturity, and the females are then capable of producing eggs and starting the cycle over again. Thus, a flock of poultry can very quickly become infested with these parasites where suitable conditions for development exist.

Symptoms of Worms

Common indications of worms are loss of condition, feathers loose and ruffled, the comb and face pale, and a glassy appearance in the

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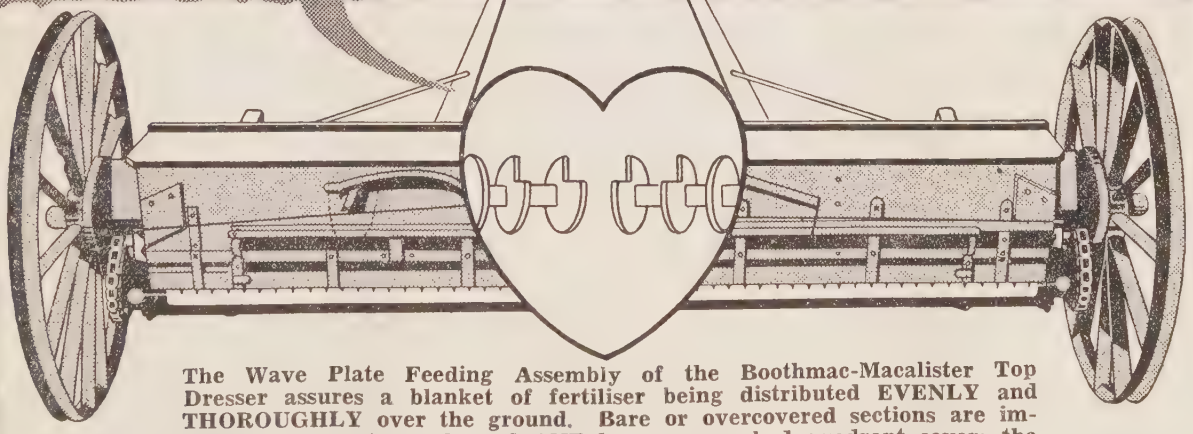

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eyes. The appetite is often increased at first and later impaired, and the excrement is thin and contains a good deal of yellow slime. In young birds there is general unthriftiness and retarded growth, and often a weakening of the legs and great tendency to sit about. With adult fowls this is not so noticeable.

The accompanying photograph was taken at the Department's Animal Research Station at Wallaceville, and Fig. 1 shows acute parasitic infection in a growing pullet. The symptoms shown are similar to those of other poultry ailments. It is therefore always advisable for a poultry-keeper to kill a sick bird where he suspects worms, cut open the intestine from the gizzard down, and make a thorough examination. This is really the only certain way to diagnose the trouble.

Treatments

Many treatments are recommended. For instance, 2 teaspoonsful of spirits of turpentine with 1 oz. of Epsom salts and 1 oz. of sulphur to every 12 birds, fed in the mash, has given good results.

Tobacco dust fed at the rate of 2 to 3 per cent. in the mash has been advocated for many years. Copper sulphate given at the rate of 1 oz. to 30 birds has been found effective in removing worms from adult birds when in the moult, and the use of nicotine sulphate and Epsom salts has given good results.

There is little doubt that individual treatment is probably the most effective of all, but in the larger plants it is not always practicable, and flock treatments have to be adopted.

Several experiments have been tried at the Wallaceville Poultry Station in the treatment of birds affected with worms, but the use of nicotine sulphate gave the most satisfactory results. The birds were starved for a day before the dose was given, and the nicotine sulphate was used in the proportion of one liquid ounce for each hundred adult birds. This was added to the water with which the mash was moistened, and in the same water ½ lb. of Epsom salts was also added and well dissolved before mixing in the mash. Sufficient mash was moistened with the water mixed with the nicotine sulphate and salts, so that each bird had about 1 oz. of mash. It is important for the troughs to be sufficiently long so that all birds in the flock can feed at once and in comfort. It must be clearly understood that nicotine sulphate is poisonous, and that on this account the dose stated must not be increased; otherwise, fatal results may follow.

In most cases for a few minutes after the birds have eaten the first mouthful or two of mash they will lose the power of their legs and give indica-

tions that they are likely to succumb under the treatment. The birds will soon recover, however, and regain a normal state, provided, of course, that the amount of nicotine sulphate is not given in excess of the quantity stated.

When small flocks are to be treated it is a good plan to add 9 oz. of water to 1 oz. of nicotine sulphate and to use 1 oz. of this mixture to every 10 birds.

Cleaning is Essential

The effect of this treatment given after a fast will be to expel the worms. It is therefore strongly advisable to confine the affected birds to the house for at least the next day after being treated so that the cleaning-up process may be properly carried out, thus avoiding the risk of the runs becoming further infested.

Care must be taken to clean up thoroughly and remove all droppings after the treatment and, in addition, the quarters should be given a good spraying with strong disinfectant.

It is a good plan to place wire netting over and in front of the perches so that the birds will not have an opportunity of picking among the droppings after being treated. The treatment may be repeated in, say, two weeks' time if desired.

Individual Dosing

The above method is quite effective in helping to keep the intestinal parasites under control, but, like all other treatments, it is well known that 15 to 20 per cent. of these parasites escape from being expelled, and if some birds show symptoms of still being fairly badly affected, individual dosing of these few birds under isolation will prove useful in preventing a further rapid recurrence of the trouble.

In the field work some poultry-keepers complain of the difficulty in getting the poultry to eat the mash with nicotine sulphate in it. This is true to a certain extent, and particularly does this apply if the birds have not been fasted long enough beforehand. A good method of overcoming this trouble is to use Parish's Food in the drinking water at the rate of one tablespoonful to each gallon for three days before the treatment, or to use two tablespoonsful to each gallon of water with which the mash is mixed each day for the same period. This has the effect of making the birds keener on the food, and they will eat the treated mash more readily. It is also quite a good plan to continue this food for three days after the worm treatment, as it appears to assist the birds to recover more quickly.

Suitable Times for Treatment

It is generally recognised that a treatment such as that recommended is always liable to check egg production, and with the object of preventing this it is advisable to treat for intestinal parasites only twice a year. Young maturing pullets should be treated about one month before laying, which will always assist in improving the egg production during the early autumn and winter months.

The adult birds may be treated about the end of April when in the moult, and even given two doses if necessary. No loss in egg production will be noticed, as these birds are seldom laying at that time.

It should, of course, be recognised that parasitic life is more or less in the dormant stage during the cold winter months, but begins to multiply very rapidly in the spring, and with the object of keeping these parasites under control it is often necessary to treat the laying flock during October. This treatment will check the egg production to a certain extent, but will not have the effect of putting the birds into a moult or causing long delay in the laying period. A marked improvement is generally noticed in the condition of the birds after treatment, and the egg production is considerably improved during the summer months, when egg prices have a hardening tendency.

Young, growing stock about three months old often show indications of intestinal worms, and if these symptoms appear it is a wise plan to give a treatment at this period to prevent any retarding of the growth, but sanitary measures should also be adopted.

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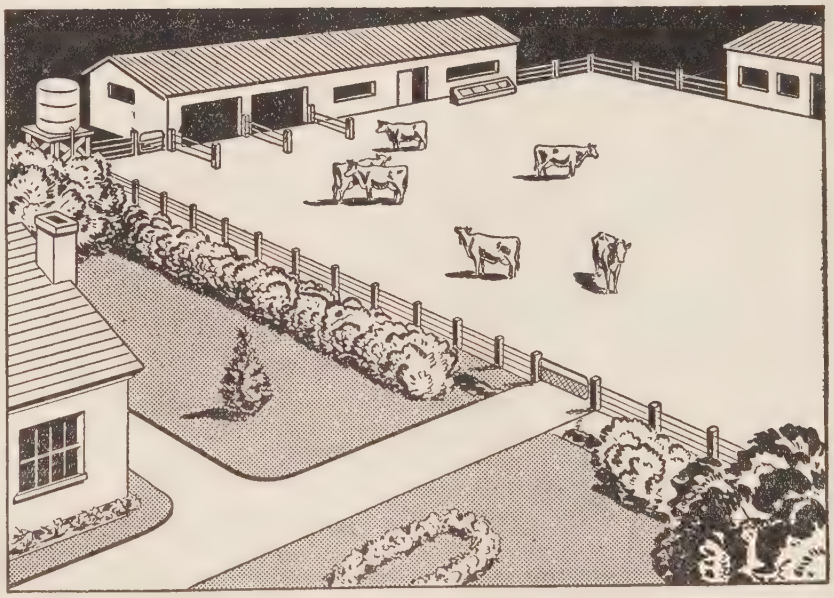

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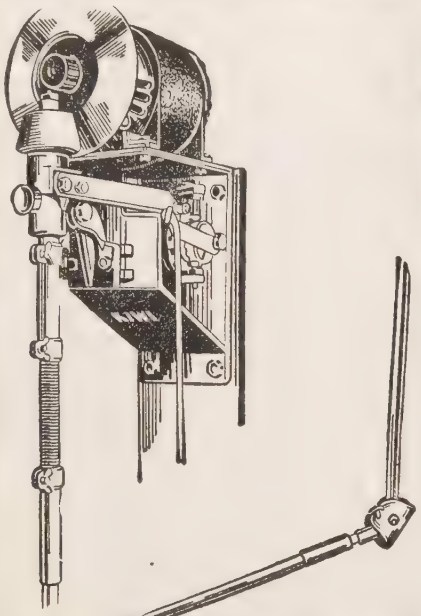

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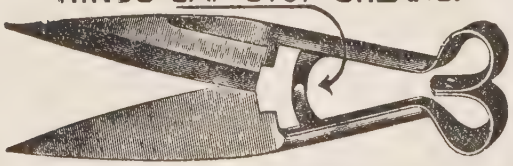

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Lemon Culture in New Zealand

— By —

W. K. DALLAS (N.D.H.N.Z.),
Director, Horticulture Division, Wellington.

(Continued.)

Fertilisers

To obtain profitable crops and maintain satisfactory growth citrus trees require ample supplies of plant-foods. Although the turning-in of cover crops and frequent cultivation do much to enrich the soil the addition of artificial manures is also necessary. Manuring, however, should not be overdone. Experiments have shown that nitrogen and, to a less extent, phosphates and potash increase yield and improve the quality and hardiness of the new growth. Best results are obtained with fertilisers where there is an ample supply of decaying organic matter and moisture in the soil.

Nitrogen encourages growth. Fertilisers which contain nitrogen are sulphate of ammonia (20 per cent. nitrogen), nitrate of soda (15.5 per cent. nitrogen), blood and bone (4 per cent. to 8 per cent. nitrogen), dried blood (10 per cent. to 12 per cent. nitrogen), bonedust (3 per cent. nitrogen), and farmyard, sheep, and fowl manure. Nitrate of soda should not be used regularly upon clay soils. Blood and bone, which also contains phosphate, is used extensively by citrus growers. It takes usually at least four times as much blood and bone as sulphate of ammonia to supply a given quantity of nitrogen. Sulphate of ammonia is generally the cheapest per unit of nitrogen, but as its regular use increases soil acidity an annual application of 1½ lb. carbonate of lime for each 1 lb. sulphate of ammonia is necessary, applied about one month prior to the spring application of nitrogen.

Phosphates promote root-growth, better setting of fruit, and earlier maturity of crops. Phosphates are normally supplied as superphosphates, basic phosphates, basic slag, blood and bone, and as bonedust, but the particular form used depends on local conditions and cost.

Potash is stated to improve flavour and the colour and smoothness of the skin. It is abundant in the majority of New Zealand soils, and in most localities only small dressings are necessary. Wood ashes that have not been weakened by rain are also a source of potash as well as of phosphates and should not be wasted. Where plenty of such ashes are available no other potash will be needed; about 500 lb. per acre is an adequate dressing for full-bearing trees.

Other manures which may be used are blood and bone, well-matured fish manure, and meat-meal. Lime improves the physical condition of heavy soils, and is also useful in correcting soil acidity.

If possible, organic matter, such as cover crops, farmyard, sheep, fowl, and well-conditioned fish manure, etc., should be turned in annually.

The fertilisers recommended for young non-bearing trees, distributed over the area occupied by the roots, are:—For the first year after planting sulphate of ammonia and superphosphate, ½ lb. each, and sulphate of potash, ¼ lb. per tree, followed by an annual increase of ½ lb. of the two former and ¼ lb. of the latter per tree until the trees come into bearing. In addition, carbonate of lime should be applied at the rate of 1½ lb. for every 1 lb. of sulphate of ammonia used.

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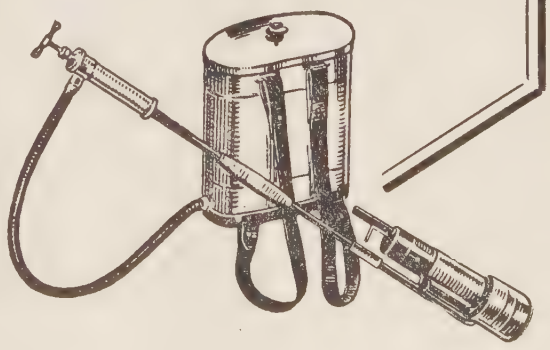

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The quantities given in the following table are to be used as a basis for manuring bearing trees from 4 years to 12 years from planting.

Annual Dressing of Fertilisers for Bearing Trees from 4 to 12 Years from Planting.

Fertiliser.	*Period of Application.*	
	Spring (August-September).	*Late Summer (January-February).*
Sulphate of ammonia ..	2 lb. to 5 lb. per tree	—
Lime (carbonate) ..	1½ lb. to each 1 lb. of sulphate of ammonia applied. Apply at least one month prior to dressing of sulphate of ammonia and work into soil. (Above treatments to be applied within spread of trees.)	3 cwt. per acre combined with superphosphate mentioned below.
Superphosphate ..	3 lb. per tree, applied within spread of tree prior to deepest working.	3 cwt. per acre broadcast at time of sowing cover crop.
Potash (sulphate) ..	1½ lb. per tree combined with phosphate.	—

Nitrate of soda may be substituted for sulphate of ammonia if desired. For older trees the dressings, in most situations, should be increased.

Diseases and Insect Pests

Fungous diseases and insect pests are more readily controlled when the trees are given good care. A tree crowded with growth provides a suitable harbour for pests and renders treatment very difficult. Important factors in the control of diseases and insect pests are proper attention to drainage, improvement of the soil, pruning, and the maintenance of clean surroundings, including the gathering and the destroying of decaying fruit before the spores are ready for dissemination. Bulletin No. 20, dealing with the recognition and control of citrus diseases in New Zealand, is available on application.

Renovating Trees

Trees may become unthrifty from a variety of causes, such as a heavy infestation of insect pests or the presence of fungous diseases, want of systematic pruning, bearing continuously heavy crops of fruit, or old age. So long as the roots and trunk are sound it is possible to restore trees of poor production to a thrifty condition. Such trees may have a good deal of dead wood, may have run up in a straggling manner, or have lost branches through breaking down. These trees should be treated by cutting back the broken, dead, and diseased branches to healthy tissue and removing superfluous growth. The heading-back of the main branches should be done in the early part of October and should not be too severe the first year, but only partially done so as to avoid removing too much foliage before new growth develops.

The tree during the spring and early summer should be then sprayed two to three times with a summer-oil at a 2½-per-cent. dilution. In the winter following the appearance of the new shoots upon the lower parts of the tree the renovating may be continued. The hard cutting of the tree back to the main leaders should be done about October. Branches removed should be cut back to the branch or trunk from which they issue, so as to leave no "snags." Large wounds should be painted over with either Stockholm tar or a thick mixture of white-lead and oil. The trunks and limbs exposed to the sun by pruning should

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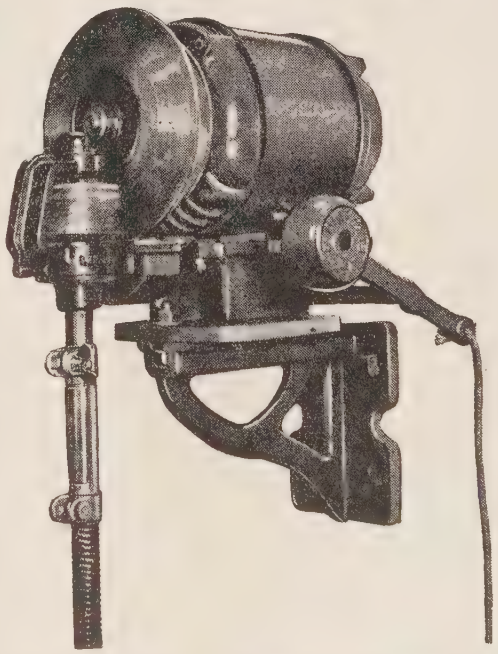

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be protected from sunscald by applying a coat of whitewash. The soil around these trees should be cultivated deeply towards the end of April, before the late autumn or winter rains set in. The cultivation should become deeper with increasing distance from the trunk. Any available well-rotted manure or orchard and garden refuse should be worked into the soil around the trees. Should a good rain not be experienced within a fortnight the subsoiled trees should be given a good watering. The trees will soon push out numbers of new shoots. These should be thinned to the number required to furnish the tree with new branches and be afterwards subjected to the same shortening as described in a previous paragraph under the heading of pruning. Trees that are dying because of roots lost from disease or from unsuitable soil conditions obviously cannot be resuscitated, and should be destroyed.

*Top-Working Trees**

Trees that are in a healthy condition can be reworked with other varieties by budding. Grafting of citrus trees is somewhat uncertain. The buds should be worked into young wood, which is obtained by heading back the trees to a suitable point on the main limbs at the beginning of October. The new growth should be thinned out during the summer, leaving sufficient selected shoots which, when worked, will refurnish the trees with new branches. If the wood has attained sufficient size the buds may be inserted during the following March; if not, the budding will have to be deferred until the following November.

In the former case the buds remain dormant till spring. When growth starts the branches should be headed down to within 8 in. of the buds. It is not advisable to head close to the buds, as the sap in the wood left above affords nourishment to them and serves as a support to which the resultant shoots may be tied to prevent them from being blown off. The stump above the bud should not be allowed to make any growth and should be cut off as soon as the shoots are strong enough to support themselves. Shoots arising from the limbs and any remaining branches should not be removed immediately, but kept in subjection by thinning and heading back for two seasons, until the branches arising from the bud-wood are well established.

(To be continued.)

* If further information in reference to budding and grafting is desired it may be obtained from the following Departmental bulletin: Bulletin No. 81, "The Budding of Pip and Stone Fruit-trees."

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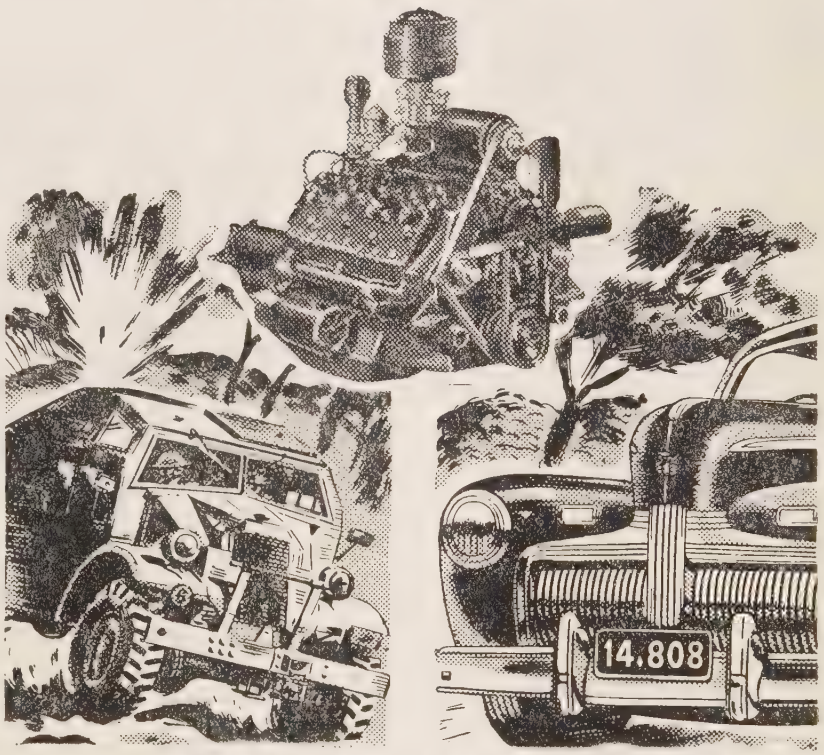

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THE target for wheat in the increased production drive for the 1944-45 season is 300,000 acres, and in view of the increased sowing this will entail the following article, though it deals particularly with recognised wheat-growing practices in Canterbury, applies in its essentials to all successful wheat growing, and contains basic information for those contemplating extending their cropping activities into wheat production in response to the urgent need.

WHEAT growing in New Zealand has formerly been confined chiefly to those areas where the conditions of soil and climate are most favourable to its production, namely, Canterbury, North Otago, Marlborough, Nelson, and certain parts of Central Otago. However, on account of the extreme length of New Zealand, transport costs are comparatively high, so that wheat may often be just as profitably grown in less favourable localities such as

— By —
J. G. McKAY,
Fields Instructor, Christchurch.

Southland and relatively small areas in many parts of the North Island. The total area of wheat threshed in New Zealand in 1943 was 287,000 acres, of which 244,000 acres were grown in Canterbury and North Otago.

Varieties

In the February issue of the Journal of Agriculture the Seed Certification Officer gave a summary of the Wheat Research Institute's report on wheat varieties in the 1943 season. The report discusses the popularity of our main varieties in the various districts and in so far as it relates to Canterbury-North Otago the position is shown as follows:—Cross 7 represented 53 per cent., Tuscan and Fife Tuscan together 28 per cent., Hunters 10 per cent., and Dreadnought 8 per cent. of the total number of crops. Recommendations regarding suitability of the varieties for various soils also appear in the summary.

Seed

Seed selection is a big factor in the improvement of our wheat-growing industry and much work in the direction of improving our older wheats by selection and of the breeding and trying out of new varieties is carried out by the Wheat Research Institute in co-operation with the Agronomy Division, the Department of Agriculture, and Lincoln College.

Nucleus lines of improved strains of various wheats are grown annually at the Agronomy Division of the Plant Research Bureau, Lincoln, and passed over either to Lincoln College or to private farmers for increasing and distribution as certified seed under the Department of Agriculture's certification scheme. This scheme was inaugurated by the Department with the object of making available annually a supply of seed wheat of reasonable purity and as far as possible free from seed-borne diseases such as loose smut.

Growers are strongly recommended to use certified seed, each sack of which carries a Departmental seal and a tag bearing the name of the variety. Such seed is the produce of crops of high purity with a relatively low percentage of loose smut.

Loose smut is carried over in the seed—not upon it—and the only known means of keeping this disease in subjection is by a system of hot water treatment too intricate to be carried out by the average farmer. Seed used for sowing the nucleus areas of seed grown by the Agronomy Division and the larger areas produced by Lincoln College is treated for control of this disease. Such treatment, while not successful in eliminating loose smut for all time, does at least afford temporary release from it. All wheats are not susceptible to loose smut to the same degree and some are evidently immune from it, a notable case being that of Hunters. So far as is known loose smut has never been observed in this variety.

Wheat intended for seed purposes should be machine dressed to remove weed seeds and poor, unprofitable grain and the seed should be treated for control of stinking smut. Stinking smut is known in all wheat-growing countries and where no preventive measures are adopted losses due to this disease may prove very high indeed. Even a small percentage of stinking smut lowers the market value and renders the grain unfit for milling purposes. The source of infection is the smut spores that attach themselves to the surface of the seed. The bluestone and formalin treatments, if properly carried out, are both effective in controlling stinking smut, but both injuriously affect germination of the seed. These wet treatments have now been almost entirely displaced by the organic mercurial dust treatments such as Agrosan and Ceresan. These preparations are in powder form and treatment consists of thoroughly mixing the powder with the seed wheat. The dust treatment has several advantages over the wet treatment. It may be carried out at any convenient time and does not affect keeping quality of the grain or injure germination. A satisfactory drum that will treat all the seed required for the average farm can be made at a small cost, but most seed-dressing firms have installed dusting machines so that a grower who is getting his seed machine dressed may also have it dusted at a small cost.

Direct heading wheat

Threshing from the stook

Soil and Climate

Wheat does well on good loams and soils of a rich nature. It thrives well on soils high in lime. Actually the crop is grown on a very wide range of soils, its success on some of the lighter types being of course largely dependent upon an adequate supply of moisture in the soil during the final stages of growth rather than the actual fertility itself. However, the advisability of growing wheat at all on certain of our lighter soils is often questioned because it may result in so lowering the fertility of such soils as to render them incapable of growing pastures satisfactorily without considerable building up. This, no doubt, is true, but the present war situation does to some extent suggest that a slight departure from what we would normally regard as sound farming practice is warranted.

Although wheat in New Zealand is grown on areas differing widely in rainfall it is seldom grown where the rainfall is greater than 50in., the bulk of the crop being harvested from areas having a rainfall of from 20 to 40in.

Place in Rotation

Wheat being a cash crop generally occupies that place in the rotation most favourable to high yields such as after grass or peas, likewise after linen flax, or rape following grass, or after potatoes. Although no definite system of crop rotation is actually adhered to it has been estimated that from 40 to 50 per cent. of the wheat sown in Canterbury follows grass while the growing of wheat after wheat on the heavier land is fairly common.

The growing of wheat after wheat is perhaps not always sound practice, but on the better-class soils land having carried good pasture for a few seasons is as a rule capable of producing two successive crops of wheat without becoming unduly depleted. Even on the stronger soils the number of wheat crops that may be profitably taken are, however, limited. Besides reducing soil fertility to a low level the practice of growing several successive wheat crops on the same land tends to encourage the spread of certain diseases which are carried over in the soil.

Preparation of Land

The methods and amount of cultivation required in preparing land are largely dependent upon soil conditions and the previous crop. A well-prepared seed-bed is, however, essential if the best results are to be expected. Occasional good crops of wheat are grown on lea land which has been simply ploughed and worked down, but this one-furrow method of handling the lea is deservedly not popular. Lea land intended for wheat will as a rule greatly benefit by good preliminary cultivation such as skimming and working up prior to deep ploughing. Similarly where wheat follows wheat preliminary cultivation of the stubble is desirable, although with headed wheat the usual method is to burn off the stubble. Early skimming of lea land is distinctly beneficial as the turf is thus given time to decay and become available as plant food. If preliminary cultivation is adequate a good tilth will be obtained for turning under when deep ploughing takes place. The ploughing under of a good tilth is of assistance in the development of a strong root system which enables the wheat plants to withstand dry weather conditions often experienced during the final stages of crop development. Following certain crops the necessity or practicability of surface cultivation before deep ploughing depends on circumstances. In cases where rape follows lea on a friable loam it may be that one deep ploughing followed by adequate cultivation will give satisfactory results. Similarly where wheat follows peas, the pea land may be so friable that no extensive cultivation is necessary for the wheat crop. Such a condition is usually obtainable on potato land or after linen flax.

A moderately rough or cloddy surface with well-worked soil underneath can usually be looked upon as ideal for autumn wheat. If the surface is very fine it is liable to cake, especially on the stiffer soils.

Manuring and Sowing

Crops such as wheat remove large quantities of plant food from the soil and unless something is put back a gradual depletion in fertility must follow. It has been estimated that phosphate equivalent to 1cwt. per acre is removed from the soil in the production of a 40-bushel crop of wheat. Unlike nitrogen, which can be returned to the soil through the agency of soil organisms, legumes, and green manuring, phosphate can be returned only by direct application, hence the need for artificial manures with the crop.

Experiments carried out by the Department in Canterbury have shown that 1cwt. of superphosphate sown with the seed gave an average increase of 4 bushels per acre. Increases were fairly consistent irrespective of the previous crop. As the return from a larger quantity than 1cwt. of superphosphate per acre did not give returns commensurate with the extra cost involved it is indicated that more than 1cwt. per acre cannot be generally recommended. Trials carried out during the last four years have shown that serpentine superphosphate sown at the same rate per acre as superphosphate will give yields equally as good as were those from superphosphate.

The bulk of the crop is sown in autumn and early winter. These earlier sown crops generally yield better than those sown in spring as they have a longer period of growth. The usual sowing period is from April to June and normally the greater part of the autumn crop is sown in May. August and September are the usual months for spring sowings. Occasional crops

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IF THE CAP FITS - WEAR IT!

The Waste Reclamation Authorities have no medals for distribution. But here and now we name as hero every citizen who has

(1) Insisted that within his or her household no clean waste paper shall ever be burned, binned or buried. But that it shall be put in a special receptacle (lovely word) and saved.

(2) Had the foresight, memory, or horse-sense to heave the bundle of waste paper in the car and drop it off at the Waste Reclamation Depot every time the car had to be used for other urgent reasons.

(3) Bribed or otherwise persuaded a neighbour's child to call and take the waste paper to school every week.

(4) Hasn't groused about someone not calling for the waste paper, but has used his or her ingenuity and energy in getting that waste paper to a depot.

A moment's consideration will show that it is manifestly impossible for the authorities to collect all waste paper from every household regularly enough. But with the cheerful help of the public the job can be done easily. Be a paper saver and a paper deliverer and wear a little halo all of your own.

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"THERE IS A WASTE RECLAMATION DEPOT IN YOUR TOWN"

Issued by authority of the Ministry of Supply and under the auspices of the National Council for the Reclamation of Waste

are sown in October, but satisfactory results from late spring sowings can be expected only when conditions are very favourable. A very general seeding rate for Canterbury is from 1½ to 2 bushels per acre according to soil and climatic conditions. On the light, dry soils a lighter seeding is generally used compared with what one would sow on the heavier soils. In damp districts seedings are usually heaviest because the necessary moisture is present to bring the greater number of plants to maturity.

Subsequent Cultivation

Most wheat crops benefit by rolling in spring, especially if winter conditions have been dry. Rolling firms the soil around the roots of the plants and stimulates growth. Whether or not rolling should be followed later by harrowing will depend on soil and weather conditions. On free loams and soils that contain a good supply of organic matter, such as grassland having carried a heavy turf, harrowing may not be necessary, but if the land is stiff and inclined to cake and crack, it is best to make harrowing the last cultural operation before harvest, since the soil mulch thus created tends to arrest evaporation of moisture when dry conditions are experienced.

On some of the heavier wheat lands it is customary to feed off autumn-sown crops in spring. Although the value of such a practice is at times questioned there is no doubt that it is beneficial when growth is rank and flaggy, as it tends to reduce the susceptibility of the crop to mildew and rust, and also reduces possibilities of lodging. Where feeding off is carried out it is best done by stocking heavily with sheep for a short period and preferably when the land is in a fairly dry condition. Harrowing after feeding off is generally beneficial. Late spring feeding is as a rule inadvisable as it may so retard subsequent growth as to substantially reduce yields.

Harvesting

The best time to reap wheat is largely determined by climatic conditions and the variety to be handled. In situations exposed to wind especially varieties such as Hunters and Dreadnought, which shake readily, usually require to be harvested before the grain has completely ripened in order to minimise losses.

With our better wind-resisting varieties, namely Tuscan, Cross 7, and Fife Tuscan, the crop may be allowed to ripen completely before harvesting is undertaken. Recent investigation has shown that there is little in a belief once held that wheat harvested at the dough stage gives better results for milling than when allowed to become completely ripe.

Until recent years the bulk of the wheat crop in Canterbury was cut with the binder and threshed from the stook. At one period the English wooden mill was the only type in use, but the American mill then came into prominence and largely displaced the English mill, over which it has certain advantages. Being a comparatively cheap machine it can be profitably owned by a single farmer who has a sufficiently large area of crop to warrant it or jointly owned by several having relatively small areas. Threshing from stook is still largely adopted with varieties liable to shake, but direct heading of the better wind-resisting varieties is fast becoming general practice.

The header harvester has been used for many years in Australia and other countries where large blocks of land are sown in wheat annually, necessitating the quickest and cheapest harvesting methods available. The special feature of such situations is the practically ideal harvest conditions experienced. Header harvesters are of comparatively recent introduction into New Zealand and although the general opinion at one time was that headers were unsuited for this country large areas of wheat are now handled in this way in Canterbury either by direct heading or the windrow method—mainly the former. Heading cuts the per bushel cost to a minimum by reducing harvesting to a single operation. In addition less mechanical energy is expended per bushel of grain threshed in that a smaller bulk of material has to be dealt with.

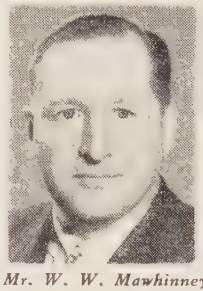
It must be admitted, however, that our climatic conditions are not at all times ideal for these methods, and in wet seasons where crops are headed in damp condition the value of the grain may be seriously affected. Actually the quality of grain either for milling or seed purposes is not considered to be detrimentally affected by moisture content so long as this can be reduced in the field to such an extent that un-

MASSEY-HARRIS COMPANY LTD.

PROMOTION FOR MR. W. W. MAWHINNEY.

MR. CHAS. GALBRAITH APPOINTED MANAGER FOR N.Z.

Mr. W. W. Mawhinney, Manager for New Zealand of Massey-Harris Co. Ltd. for the past six years, has received notification of his promotion to the very important position of Export Sales Manager of Massey-Harris Co. Ltd. with Headquarters at Toronto, Canada.


Mr. W. W. Mawhinney

Before returning to Canada, Mr. Mawhinney will make an extended tour of several of the Company's Export Branches.

In the course of his new duties it is anticipated he will visit New Zealand from time to time. It is recognised that New Zealand primary production is of paramount importance at the present time, and Massey-Harris Company Ltd. realise there is a great future for advanced farm equipment in this country; hence it will be their policy to have a representative from headquarters visit the Dominion occasionally in order to keep in close touch with requirements here.

Mr. Mawhinney, on the eve of his departure from this country, wishes to express his deep appreciation and sincere thanks to clients and trading houses for their support of and co-operation with him and his Company during his period of management, and he wishes one and all success and prosperity in the future.

Mr. Mawhinney is being succeeded as Manager for New Zealand by Mr. Chas. Galbraith, previously Supervisor of the British Columbia Branch at Vancouver of the Massey-Harris Organisation.

Mr. Chas. Galbraith

Mr. Galbraith has had a lifetime experience in the implement business, having been associated with Massey-Harris Co. Ltd. in Great Britain, Ireland, Canada and New Zealand. He has been in this country now for the past three months, during which time he has intensively toured the Dominion with a view to becoming acquainted with local problems.

Mr. Galbraith is a World War veteran, having served in France with the Imperial Forces from 1914 till the end of the war.

P. B. A.

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WILL SAVE THEM

TAILER ONLY—

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COMBINED CASTRATOR and TAILER—

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You can save those valuable lambs this coming docking season by using the "100 per cent. efficient" "MOWAT" instrument. For many seasons now farmers have prevented loss entirely, and have done the job quicker . . . better . . . safer! The MOWAT tailer and combined castrator and tailer are scientifically designed for scientific docking. Make sure of yours early.

WHAT PLEASED FARMERS SAY:—

Hastings Club, Hawkes Bay, Feb., 1943.

Dear Sirs,—This tool meets a long-felt want on the farm, is almost foolproof and is 100 per cent. efficient. You can dock a paddock of lambs and in a relatively short time they are mothered up and away. (Signed) JOHN GRAHAM (for Netherby Ltd.)

Dromore, Canterbury, April 16, 1943.

Dear Sirs,—I tailed over 500 lambs with the "MOWAT" instrument; did not lose a lamb; arthritis was conspicuous by its absence, and am pleased to number myself among the very satisfied owners and users of these instruments. (Signed) D. J. SCARTH.

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due sweating does not take place during storage.

The method of conditioning headed wheat now most commonly adopted by growers is to leave the sacks standing on end in the field for a period and if necessary turn them end for end to facilitate drying. It is very desirable, however, to allow the conditioning to take place before the crop is headed, which necessitates on the part of the farmer at least some idea of the moisture content of the grain in the ear. The testing services mentioned later will prove of great assistance in this connection, and should be made use of if any doubt exists as to the moisture content of the wheat. Though this method of conditioning is attended with a certain amount of risk under extremely damp conditions, it tends to reduce moisture content rapidly if weather is favourable.

Moisture Testing

In order to prevent the sale of out-of-condition wheat the Wheat Committee, beginning with the 1937-38 season, decided not to accept wheat having a moisture content of more than 16.5 per cent., while it was prepared to accept wheat with a moisture content of from 15.5 per cent. to 16.5 per cent., only subject to a deduction of 4d. per bushel from the full price. The Wheat Research Institute offers facilities for the moisture testing of wheat in accordance with the standard set down by the Wheat Committee. No charge is made for this voluntary service, which is open to all farmers and dealers in wheat.

It is pointed out that the value of a moisture test depends upon the representative nature of the sample forwarded. In sampling, wherever possible, all sacks should be sampled and the sampler pushed well into the centre of the sacks. A 2oz. tin of any sort will hold all the wheat required for such a test, and if sealed round the lid with a strip of insulation or adhesive tape the wheat will remain practically unchanged for many days. Samples taken prior to heading to determine moisture content at that period are also accepted for test by the institute.

DELAYS *are* DANGEROUS

EFFECT That POLICY

with the

GOVERNMENT LIFE

TO-DAY

Home-Made Cooler

Coolgardie Safe for Farm Foodstuffs

By A. A. POWELL, Cool Storage Officer, Horticulture Division, and C. V. NATTRASS, Fields Division, Wellington.

The farmer who kills his own meat for the household has always been faced with the problem of keeping the maximum amount possible in a fit condition for consumption for a fairly long period. Where power is reticulated, of course, the farmer with finance available has had a comprehensive range of electric refrigerators made by reliable manufacturers to choose from, but during the war and the consequent conversion of manufacturers' plants to the production of war materials refrigerators, even for the man who could afford them, have become practically unobtainable.

THUS, even in districts where power is available the position has been little better than that in non-reticulated areas, and defective meat-safes and makeshift methods of keeping perishable foodstuffs have meant a considerable economic loss to the farmer himself and incidentally an aggregate effect on the country's production effort.

Practicable Proposition

For the farmer or householder who is a handy man the Coolgardie cooler dealt with in this article is a practicable proposition. It can be made at very low cost from materials readily available about the home and will be found to give a great deal of useful cooling when properly constructed. The farmer does not need to be a cabinetmaker or joiner to do a creditable job with the simple directions given. The measurements given can be adjusted according to the amount of storage space required.

Wherever the cooler has been in extensive use enthusiastic reports have been given of its efficacy and adaptability to the storage of almost all perishable foodstuffs used in the average household.

Fig. 1 shows the framework of the cooler fitted with shelves, door, and door fasteners. The overall dimensions are:—Height, 4 ft.; width, 3 ft.; depth, 2 ft. 6 in. Materials required and approximate cost are:—

	£	s.	d.
100 ft. 3 in. x 1 in. timber for framing; 20 ft. 2 in. x 1 in. timber for bracing	1	10	0
2 hinges and screws		2	0
Nails			6
1 pint priming		2	6
1 quart water-resisting paint		7	6
1 8 ft. x 3 ft. sheet 24-gauge galv. iron, approx.		13	9
Making up of trays by plumber (dimensions: top tray 38 in. x 32 in. x 2¼ in. deep, bottom tray 37 in. x 30½ in. x 2½ in. deep)		12	6
3 yds. of 18 oz. grade hessian, 6 ft. wide, at 1/9 yard		5	3
Total	£3	14	0

Care must be taken to make the safe fly-proof. The door must be a good fit and the hessian covering should be carefully attached. The door is also lined with hessian.

Fig. 2 shows the hessian taken over the top of the two sides and back of the top tray. Weights will be necessary to keep the hessian anchored. When the top tray has been nearly filled with water the hessian acts as a siphon and the water saturates the hessian on the sides and back of the cooler. The tray in which the cooler

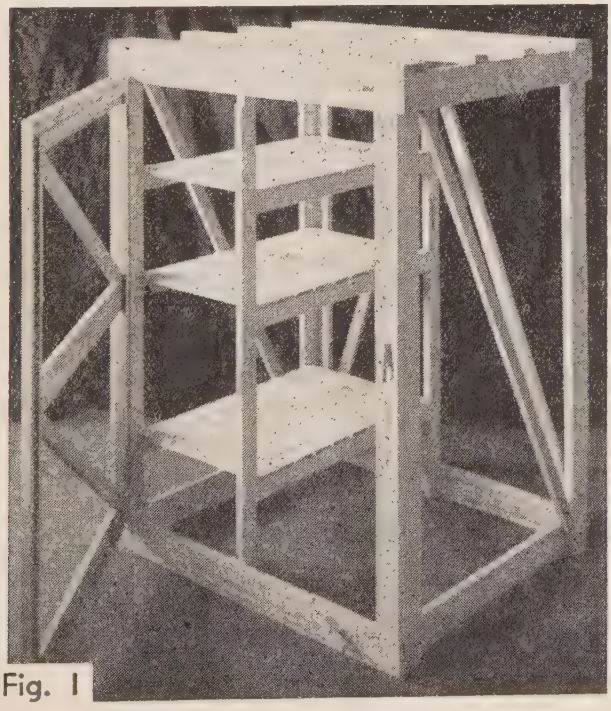

Fig. 1

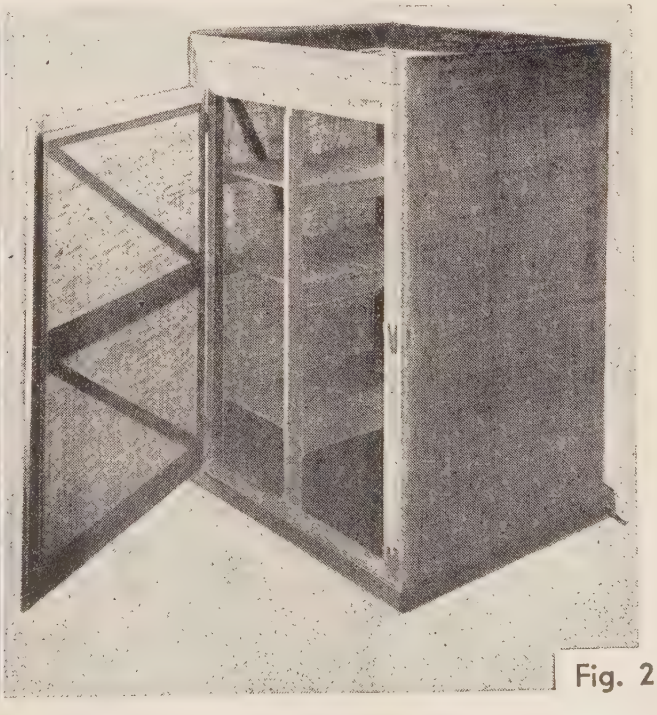

Fig. 2

stands acts as a water catchment and gives added cooling to the safe. The overflow pipe shown in Fig. 2 should be about ½ in. below the top of the bottom tray, the water being run into the nearest drain.

The three shelves shown in Fig. 2 may be used for milk, butter, joints, etc., while the bottom tray, which contains about 1¾ in. of water, is useful for the quick cooling of butter or jellies. The space on the right of the shelves should be large enough for hanging carcases of mutton, joints, etc.

To obtain the best results from the cooler it should be put in a shady place, such as a back verandah, where a draught will increase the evaporation of the water on the hessian sides. A pipe or hose should be run from the water supply and the tap adjusted to maintain the water level in the top tray. Only about 2 gallons of water in 24 hours is necessary.

The woodwork of the safe should be well painted with a primer and waterproof finishing coat, particularly the bottom, which rests always in water.

"The Theory and Practice of Poultry Feeding" (Bulletin 198) has just been published and is on sale at 6d. per copy (post free) at the offices of the Department of Agriculture at Auckland, Wellington, Christchurch, and Dunedin. It contains information of value to all interested in egg production.

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Slaughterings of Stock

THE following returns of slaughterings of stock at meat export slaughterhouses and abattoirs for the 12 months May, 1943, to April, 1944, have been compiled by the Livestock Division:—

District.	Cattle	Calves	Sheep	Of which Ewes were	Lambs	Pigs
North Island.						
Meat-export Slaughterhouses—						
Auckland	203,348	603,001	547,477	407,744	1,531,341	291,844
Poverty Bay-Hawkes Bay	33,855	59,921	616,482	383,712	1,482,974	30,005
Taranaki-Manawatu	93,359	205,537	499,691	364,383	1,602,391	149,539
Wairarapa-Wellington	33,140	29,986	375,800	254,869	1,039,017	32,670
Totals	363,702	898,445	2,039,450	1,410,708	5,655,723	504,058
Abattoirs	133,745	36,650	640,661	244,683	142,783	56,644
North Island Totals	497,447	935,095	2,680,111	1,655,391	5,798,506	560,702
South Island.						
Meat-export Slaughterhouses—						
Nelson-Marlborough	2,069	10,556	31,121	18,754	201,122	12,386
Canterbury-Westland	14,525	39,883	361,906	312,223	1,828,020	41,545
Otago-Southland	15,023	35,509	339,166	301,353	2,450,967	7,343
Totals	31,617	85,948	732,193	632,330	4,480,109	61,274
Abattoirs	55,966	11,801	272,748	158,771	63,049	14,513
South Island Totals	87,583	97,749	1,004,941	791,101	4,543,158	75,787
Dominion.						
Meat-expt. Slaughterhouses	395,319	984,393	2,771,643	2,043,038	10,135,832	565,332
Abattoirs	189,711	48,451	913,409	403,454	205,832	71,157
Grand Totals	585,030	1,032,844	3,685,052	2,446,492	10,341,664	636,489
Same Period, 1943— Meat-export Slaughterhouses and Abattoirs	727,844	1,054,217	3,616,015	2,388,961	11,309,583	781,357
Same Period, 1942— Meat-export Slaughterhouses and Abattoirs	572,506	1,065,606	4,086,658	2,669,909	11,662,209	918,460

Slaughterings of Pigs

The 54,055 pigs slaughtered at meat works and abattoirs during the month of April were divided into weight-ranges approximately as follows:—

Up to 60 lb.	538
61 to 120 lb.	22,264
121 to 175 lb.	27,431
176 to 185 lb.	1,354
186 to 200 lb.	862
Over 200 lb.	1,606
	54,055

The grading of porkers was 93 per cent. 1st quality, 7 per cent. second quality and that of baconers was 83 per cent. prime 1's, 13 per cent. prime 2's, and 4 per cent. second quality.

In the different weight ranges the grading was as follows:—

	Prime 1's.	Prime 2's.	Seconds.
121-175 lb.	84 per cent.	13 per cent.	3 per cent.
176-185 lb.	71 per cent.	71 per cent.	7 per cent.
186-200 lb.	69 per cent.	11 per cent.	20 per cent.

SEEING THINGS THROUGH

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All New Zealand is united in producing in ever-increasing quantities and delivering with the utmost speed, equipment, materials and supplies vital to our Armed Forces. Industrial plants, mills, farms, factories—all are being called upon to shoulder unprecedented responsibilities. . . . By far the greatest burden of wartime industry falls upon Transportation. Today, Railways are the backbone of Transportation in this country and anything which impedes them weakens our whole war effort. Unnecessary train travel will hinder essential journeys, misuse of railway wagons will complicate freight schedules.

The More You Help, The Sooner We Win

Profitable Use of Supplementary Feeds For Dairy Cows

The purpose of this article is to give dairy farmers a lead in regard to methods of increasing milk production by the use of supplementary feeds, and in particular in regard to the use of concentrates (grain, grain products, etc.) for the dairy cow. Mention is also made as to how these feeds can best be used to give a maximum increase in milk at as low an outlay as possible.

It should be noted that certain valuable concentrates are not at present available, owing to war conditions. These will, however, also be discussed, in the hope that the time when the dairy farmer can make use of them is not far distant. But in so far as conditions at the moment are concerned, dairy farmers reading this article are requested TO CONSIDER ONLY THE FEEDS NOTED AS AVAILABLE NOW.

— By —

A. D. M. G. LAING, M.R.C.V.S.
Veterinarian, Hastings.

DAIRYING in New Zealand is unique in that milk production is based to a far greater extent than in any other part of the world on feed obtained by grazing. This has entailed the development of grasses and clovers of very high nutritive qualities, and extraordinary powers of growth. The management of these magnificent grasslands on intensive lines, by treatment with top-dressings, cultivating implements, and rotational grazing, has also been brought to a very high pitch of perfection. There are, however, occasional signs of a tendency to consider all these very important elements of farming which can be grouped under the heading of pasture management as a substitute for sound animal husbandry. The famous saying about the man who makes two blades of grass grow where one grew before does not mean that that is an end in itself. It is a means to an end, and that end is to enable the farmer to run more **healthy** stock on a given area than he did before. "Healthy" is stressed, as when density of population, human and animal, is increased, disease risks and sensitivity to climatic variations are also increased.

New Zealand dairying is mainly based on the spring and summer pasture growth, and it is arranged that the dairy cows shall calve down in order to take maximum advantage of this, and produce the maximum milk from pasture growth in those periods. From April to August dairy production, so far as the export trade is concerned, is practically at a standstill. The production of milk for home consumption, what is commonly termed "town milk supply," must, however, go on both in winter and summer. It is obvious that during this period supplementary feeding of the dairy cow in milk will be necessary. It is unfortunately, however, not so generally recognised that the cow due to calve in the early spring also requires a supplement to what she can pick up from the winter grazing. The writer has had to investigate a number of cases of that milk fever—grass staggers—paralysis type in dairy cows which causes such heavy losses annually, and all too often it is found that the dry cows are kept on the "back paddock" until they calve or till within a very few days of calving. They are then put straight on the spring growth of the most milk-forcing feed in the world, often with unfortunate results. The tragedy is that such occurrences are largely preventable by proper feeding.

As has been mentioned above, the purpose of this article is to describe shortly the various feeds available in New Zealand which may be used to supplement the grazing, and the most economical methods of using them. It is desired, firstly, to point out, however, that these feeds may be used in two types of dairy farming:—

1. **To give the maximum economical increase in winter milk production to cows in a town supply dairy, and also if the milk yield drops during a dry spell in the summer.**
2. **In factory supply herds:—**

   (a) To supplement the grazing for dry cows in order that these may develop a healthy calf and come into milk production after calving in good order and "on their toes" for a good season's production, and also at the same time to help by building up body reserves to "iron out" the sudden change to high milk production which occurs when the cow calves.

Such a policy actually has also resulted, in the writer's own farming experience, in a very definite reduction in all troubles associated with dairy cows at calving time.

(b) To supplement the grazing in summer dry spells for cows in milk.

Having these purposes in mind, and before discussing the types of supplementary feed, it will be appropriate as a preliminary to discuss very shortly methods of using these supplementary feeds.

The feeding of the milk cow has to be considered under two heads:—

1. **That portion which the cow requires to keep bodily functions going, to make repairs, to produce new blood, and so on. This is an upkeep allowance of food, in fact, and is known as the maintenance portion of the ration.**
2. **The other portion of the feed which is used for conversion into milk.**

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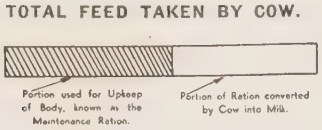
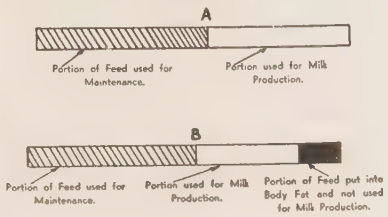
These may be described diagrammatically:—


TOTAL FEED TAKEN BY COW.
Portion used for Upkeep of Body, known as the Maintenance Ration.
Portion of Ration converted by Cow into Milk.

It is obvious that for all cows of a given weight for practical purposes the same amount of feed will be required towards body maintenance. The amount of feed required for the production of milk will, however, vary with the ability of the cow to produce the milk. Take, for instance, two cows getting the same ration:—A is the good dairy cow that turns all feed over and above that required for maintenance into milk. B can produce only a limited amount of milk. The balance goes into surplus fat and flesh on her body. B will therefore not be an economic animal to feed heavily for milk production, and even if her supplementary feed is cut down to just sufficient to enable her to produce the above quantity of milk **she will still not be economical to feed as her maintenance requirements are the same as that of a good cow and a given quantity of feed produces much less milk.** This may be shown diagrammatically:—


A
Portion of Feed used for Maintenance.
Portion used for Milk Production.
B
Portion of Feed used for Maintenance.
Portion used for Milk Production.
Portion of Feed put into Body Fat and not used for Milk Production.

B requires 2/3 the feed of A but produces only half the milk. The proportions in these figures and sketches are, of course, appreciated, and intended only to illustrated a point, i.e., they are not intended to represent accurately the proportions of feed used for maintenance and for milk.

It will follow, therefore, that when any scheme of supplementary feeding is being proposed, and certainly if expensive concentrates are to be made use of, the **increase of milk in individual cows** must be known to the farmer, otherwise his operations may be at a loss.

For practical purposes one or two weighings of a cow's daily milk before feeding commences, one again 3-4 days after, and once weekly after that, will give the dairy farmer the information required to enable him to keep a check on his feeding. There will be difficulties in fitting even a few weighings as outlined above into a town supply herd routine, but it is an economic necessity to do so. Incidentally, it also adds considerable interest to the work.

The foregoing, of course, applies to the dairy cow in full production, but as regards the dry cow the picture is much the same, though no check by weight can be made as to efficiency, i.e., so much for maintenance and so much for the development of the foetus. As, however, in **all** mammals the claims of the developing foetus have first call on the mother's body, such a check is not necessary. All that is necessary to remember in this connection is that it is during the last three months of pregnancy that much the greater part of foetal growth takes place.

Before the various types of supplementary feeds available in New Zealand are discussed a very short description of the principles of feeding must be given.

Supplementary feeds, i.e., those other than the pastures, consist of:—

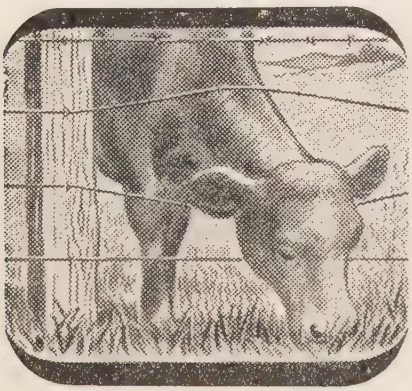
1. **Roughages or bulky coarse feeds, hays, root crops, succulent roughages such as green maize, lucerne, chou moellier, etc.**
2. **Concentrates, feeds with high nutritive qualities, such as barley, maize, oats, and mill by-products such as linseed meal or cake, bran, brewers' grains, etc.**

Both these main classes of feeds may be roughly described as being made up of:—

1. **Proteins or nitrogenous material. These rebuild the body, and where milk production is the consideration these must be in ample supply. Lack of protein usually limits milk production.**
2. **Carbohydrates and fats, which supply heat and energy.**
3. **Ash or mineral matter, in which essential minerals such as calcium are included.**
4. **Vitamins, which are essential to the functioning of the body.**
5. **Water.**

A very large volume of literature has been written about the science of feeding and it is being constantly added to. Accurate but complicated calculations can be made from Feeding Standard Tables as to the correct and balanced ration for any class of stock under any conditions. But a full discussion of these is quite outside the scope of this article. As a general guide it may be stated:

1. **That the ration for the dairy cow in milk must consist of both bulky feeds, containing fibre, which is essential for the proper functioning of the cow's digestive system, and concentrates, containing a high proportion of proteins, which are essential for milk production. This is roughly what is meant by the term a "balanced ration." Palatability and succulence are also important factors in the make-up of an efficient ration for the dairy cow in production.**
2. **During the spring and early summer modern pasture grasses and clovers under proper management are sufficient in all respects for maximum milk production.**
3. **During the other seasons, in order that profitable milk production may be at the maximum, supplements high in protein should be fed, but costs of feeding must be checked against increased milk production. If necessary, roughage requirements may be supplemented by hay, ensilage, etc.**



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As an approximate guide, the requirements of concentrates of the dairy cow in milk are noted below, it being assumed that the pasture is in good order, the season is other than spring or early summer, and/or that roughage requirements are being added to by hay or ensilage, if necessary.

DAIRY MILK.		CONCENTRATES.
If producing 20-25 lb.	then feed 1 lb.	concentrates for every 6 lb. milk produced.
,, ,, 25-30 lb.	,, ,, 1 lb.	,, ,, ,, 5 lb. ,, ,,
,, ,, 30-35 lb.	,, ,, 1 lb.	,, ,, ,, 4½ lb. ,, ,,
,, ,, 35 lb. and over	then feed 1 lb.	,, ,, ,, 4 lb. ,, ,,

A good general concentrate mixture for use as above would be:—

100 lb. barley meal
100 lb. ground whole wheat meal (stock meal)
50 lb. linseed meal or dried brewers' grains
50 lb. copra meal or peanut meal or meat meal (tankage).
3 lb. salt
3 lb. sterilised bonemeal or bone flour.

This mixture is, of course, a guide, and must be varied, in accordance with what concentrates are available, and their prices. One per cent. each of salt and bonemeal are, however, always desirable additions. The Livestock Division, Department of Agriculture, will give detailed advice to suit individual cases.

Owners must, of course, decide for themselves the best methods of feeding both roughages and concentrates. The ideal is a feeding shed with mangers or troughs. This saves wastage of hay or ensilage by trampling and dung when these are fed on the ground. With a little ingenuity it is, however, possible to arrange wire or wire netting at an angle to a fence so as to form a long trough suitable for holding hay or ensilage. In the same way, failing other facilities, small wooden boxes can be fixed as troughs to hold grain mixtures. Cows can even be fed concentrates in boxes fixed alongside the milk bail. Incidentally, if all cows are trained to tying up, it will save much trouble in other ways besides feeding.

Unless the amount of concentrates fed is small, it is a good practice to feed it in two parts, twice daily.

In regard to supplementary feeding of the dry cow prior to calving, the principles are as outlined above. Two to three pounds of concentrate mixture for 3-4 weeks before calving will suffice, provided the pasture and/or roughage are in good supply. Linseed meal makes a good concentrate for the cow which is shortly due to calve, because of its general health-giving qualities and slightly laxative effect. Particular attention should also be paid to a proportion of the roughage being succulent, such as silage, roots, green crops, etc. If all this is done, and the cow is furthermore not "forced" too soon, and is allowed to come comparatively slowly into full milk production over a period of a few days, then her body will have time to accustom itself to the demands on it for milk made by the internal mechanism which controls milk production, and the risk of milk fever, grass staggers, and paralysis will thereby be very greatly lessened.

CONCENTRATES NOW AVAILABLE TO THE DAIRY FARMER.

Linseed meal or cake.—Linseed meal is the name given to the residue from the process of crushing flax seed to express the linseed oil. It is one of the finest concentrate feeds for stock that we have, but, as with all feeds, **the price factor must be considered.** The protein content is high, it is slightly laxative owing to the oil present, and as a feed it appears to have peculiarly health-giving properties, which make it particularly suitable for animals which are off-colour, or recovering from calving troubles or milk fever. The effect of a period of feeding with linseed meal on the coat is particularly noticeable. A good proportion of all necessary mineral elements is present.

An average analysis of good-quality linseed meal is:—

	Per cent.
Protein	30.0
Carbohydrates	32.6
Fats	6.7
Total digestible nutrients	77.9
Total dry matter	90.9

Good-quality linseed meal is brown in colour, dry but oily in feel, and with a faint characteristic odour of raw linseed oil. It should weigh about 32 lb. to the bushel, so a gallon measure holds approximately 4 lb.

Linseed cake is the same product, broken up into small pieces after pressing, instead of being ground as linseed meal is.

Barley meal is the whole barley grain coarsely ground. Its feeding value for milk production is reputed to be slightly higher than ground maize. In Europe and on the Pacific slopes of the U.S.A. it is widely used and has been found to produce milk and butter of excellent quality. As far as possible a legume roughage such as lucerne hay should be fed with barley meal. An average analysis of good-quality barley meal would be:—

	Per cent.
Protein	9.0
Carbohydrates	66.8
Fats	1.6
Total dry matter	90.7
Total digestible nutrients	79.4

Barley meal weighs 30 lb. to the bushel, so a gallon measure will contain just under 4 lb.

Ground whole wheat meal, also commonly known as stock meal. As its name indicates, this is made from the whole wheat grain. In a properly-balanced ration this feed has about the same value for milk production as barley meal. It should not be too finely ground, as it will then tend to form a pasty mass in the mouth. Mixing with barley meal will, however, prevent this. An average analysis would be:—

	Per cent.
Protein	9.2
Carbohydrates	67.5
Fats	1.5
Total dry matter	89.8
Total digestible nutrients	80.1

Wheat meal weighs 44 lb. per bushel, so a gallon measure will weigh approximately 5½ lb.

As this concentrate is made from the whole grain it will contain the normal proportion of the wheat germ, the most fruitful source of vitamin E, a shortage of which in certain spring seasons is believed by many authorities to be a factor in temporary sterility of dairy cows, i.e., the cows which come back two or three times or more before holding to the bull. This feed would therefore be of value from that angle.

Copra meal, or coconut meal. This is the ground-up form of coconut cake, the by-product after the oil content of the copra has been removed for the manufacture of soap and so on. Copra is the dried kernel of the coconut, extracted after the nut has been split open.

Copra meal is a most valuable concentrate, rich in protein, easily digestible, and palatable to cows, though as with all strange feeds they must be allowed to get accustomed to it. Not more than 4 lb. per head daily should be fed to creamery supply cows, however, as larger quantities tend to make too hard a butter. But up to that amount the butter produced is of an excellent firm quality. An average analysis of copra meal would be:—

	Per cent.
Protein	18.8
Carbohydrates	42.0
Fats	8.1
Total dry matter	79.0
Total digestible nutrients	70.4

It weighs 39 lb. to the bushel, so a gallon measure would weigh 5 lb. In appearance both the copra or coconut cake and the meal are a very light brown in colour, with a faint characteristic odour of coconut. When using coconut in cake form, instead of ground up into meal, the writer used to find it advantageous to break the cakes up and soak the pieces in water for an hour or two before feeding. If the water quantities were properly adjusted (a matter of experience), a

damp meal very suitable for cow feed resulted.

Peanut meal, or ground-nut meal. This is the ground-up form of peanut or ground-nut cake. The by-products obtained after the extraction of the oil (of which the nut contains about 48 per cent. and which is used for soap and margarine manufacture, etc.) may be **decorticated** (that is, have the kernels removed), or **undecorticated,** when the kernels have been ground up and crushed with the rest of the by-product. Both forms are valuable, though naturally the undecorticated meal, which contains the kernels, has less feeding value for a given weight, but the respective prices should adjust this, i.e., undecorticated is cheaper. On the whole, however, the decorticated form is definitely to be preferred, in particular where there is any risk of damp storage conditions and resultant mould formation. Dairy cows can be fed up to 3 lb. per day of decorticated peanut meal. It is very rich in protein. An average analysis would be:—

	Per cent.
Protein	42.8
Carbohydrates	20.4
Fats	7.2
Total dry matter	89.3
Total digestible nutrients	79.4

It is evident from the above that where a legume hay such as lucerne is not available a proportion of this concentrate in the meal ration is of particular value. In colour, decorticated peanut meal is usually of a light reddish-brown but it may be darker. It weighs 54 lb. to the bushel, so a gallon measure weighs about 7 lb.

Dried brewers' grains. These are the residue from barley after the brewing of beer. Only the best quality barley is used for this purpose. The barley is spread out in a thin layer, moistened, and allowed to sprout. The malt sprouts are then removed, and the grain subjected to further processes for the production of sugar, which is converted into alcohol. That is a crude description of a complicated and scientifically accurate series of processes. The ultimate residue, dried, constitutes dried brewers' grains. They are a valuable feed for milk cows, relatively as bulky as, but of somewhat higher value than, bran, rich in protein, and palatable. An average composition would be:—

	Per cent.
Protein	21.5
Carbohydrates	30.5
Fats	6.1
Total dry matter	65.7
Total digestible nutrients	92.5

In appearance dried brewers' grains are lightish yellow. The grains do not adhere to each other, and there is a faint odour resembling beer. Weight should be 20 lb. to the bushel, or 2½ lb. to a gallon measure.

When obtainable this feed forms a good constituent in a concentrate mixture for dairy cows.

Meat meal, or tankage. This is a by-product of the freezing works. The best grade, **which only** should be used in feed mixtures for dairy cows, is made from meat and offals such as lungs, etc., from healthy animals, and which in addition have been very thoroughly sterilised by heat. It is extremely rich in protein, and forms a valuable addition in small quantities to a concentrate feed mixture. An **average** composition is:—

	Per cent.
Protein	67
Fats	12
Total dry matter	89
Total digestible nutrients	79

In New Zealand this concentrate is actually the cheapest source of protein for a concentrate feed that we have, and should therefore be included where possible. It is not, of course, palatable to cows, but that difficulty can be overcome **by mixing with other suitable feeds.**

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CONCENTRATES NOT AT PRESENT AVAILABLE TO THE DAIRY FARMER.

Wheat bran. (Though not available just now, it is such a valuable feed that it merits fairly full discussion.) It consists of the outer croppings of the wheat kernel, and is one of the most popular concentrates for feeding to cattle. It has a comparatively high proportion of digestible protein. An average analysis of good-quality wheat bran is:—

	Per cent.
Protein	12.5
Carbohydrates	41.6
Fats	3.0
Total dry matter	89.9
Total digestible nutrients	60.9

As regards mineral content, bran is rich in phosphorus but low in calcium, **and a legume roughage, such as lucerne, should be fed with it.** It is slightly laxative and its comparative bulk in relation to weight helps the digestive processes. For the same reason it forms an excellent constituent in a concentrate feeding mixture.

In appearance bran should be dry, flaky, light brown, and with a characteristic fresh odour. It weighs about 16 lb. to the bushel, so a gallon measure will contain approximately 2 lb.

Other concentrates which are commonly available in normal times but not now are the various grains, such as oats, maize, and barley. Of these, crushed maize or maize meal are the best and most economical feeds for milk cows. Yellow maize is of definitely higher value than white. Where maize is grown on the farm corn and cob meal, made by putting the entire cob through a special crusher, makes a good feed, in particular along with rich-in-protein oil-cake meals such as those from peanut cake or coconut cake (copra meal).

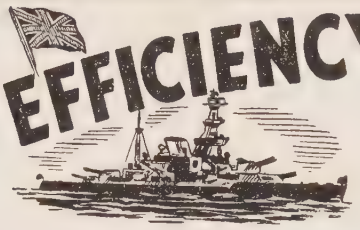
A factory by-product which has not been mentioned is cotton-seed cake or meal. This has a high protein content, but only the best quality of decorticated (husks removed) product should be used. It tends to cause constipation, and husks which may be present in the poorer qualities can be injurious to the digestive system. But sound cotton-seed meal is a good feed, with up to 37 per cent. of protein. It is, however, a good plan to use linseed meal with it, as the laxative effect of the latter will correct the binding effect of the cotton-seed meal.

ROUGHAGE FEEDS.

In an article of this scope it is impossible to treat of these in detail. In brief, and as has been already emphasised, under our dairying conditions here the pasture is the main roughage, and concentrates are required only to supplement it when its nutritional value has fallen off in autumn and winter. During the latter seasons, however, growth is slower and roughage supplements will also frequently be necessary, as is also the case during periods of drought in summer. These can be conveniently classified as hays or dried roughages, ensilage, and supplementary fodder crops fed where grown or soiled, i.e., cut and fed out in a separate paddock.

Dried Roughage or Hay.—This is the commonest method of saving roughage feeds.. Feeding tests have shown that grass dried under perfect conditions has as high a feeding value as when fed in the fresh state. Under farm conditions in New Zealand, however, this ideal is almost unobtainable, and in any case grass when cut for hay has grown out past the short stage at which it has its maximum feed value.

The object of haymaking is to reduce the water content to about 15 per cent., so that it will keep in the stack or bale. When the weather remains dry making hay is not difficult. Once the crop is mown, however, and until it is stacked or baled, it is very easily spoilt. In one trial, for instance, lucerne hay exposed to three rains, totalling 1.8 in., lost 31.7 per cent. of the dry matter. But what was much worse, **the dry matter that was so removed was largely the nutrient consti-**



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tuents (proteins, carbohydrates, and fats), while the fibre content was untouched. The feed value of the lucerne hay in this particular trial was in fact **approximately halved by rain** while it was lying out. Where weather conditions are uncertain, therefore, hay is not an **economical** crop. Artificial grass-drying methods have given excellent results, but they are not at present a practicable proposition in New Zealand.

In brief and in regard to the hays, well-made pasture or meadow hay is a good roughage but low in protein, so a high protein concentrate is required with it. Lucerne hay is an excellent roughage, high in protein and so suitable for use with concentrates such as maize meal or bran, which are low in that respect.

Straws such as fine oat straw can also be used for roughage, but the protein content is very low and the concentrate mixture must be adjusted accordingly. The contrast is shown below:—

	Oat straw. Per cent.	Lucerne hay. Per cent.
Protein	1.0	10.6
Carbohydrates	42.6	39.0
Fats	0.9	0.9
Total digestible nutrients	45.6	51.6
Total dry matter	88.5	91.4

Ensilage.—When green crops are cut and exposed to the sun they dry off and hay is formed. If they were heaped up and left exposed to the air, then fermentation and bacterial decomposition would ensue. Ensilage may be described as "cut green fodder in which the activities of the ferments and bacteria have been checked and kept under control, the result being a valuable and nutritious food which is neither living plant, hay, nor decomposed fodder." Specially-built silos or pits are used, and silage may also be made in stacks. Methods of preparation and the advantages and disadvantages of each are outside the scope of this article, but full information and advice to suit individual farmers are always obtainable through the local officers of the Department of Agriculture. It may be of interest to mention here, however, that on one large farm in Hawke's Bay, where ensilage has been in use over a period of many years, the costs are considered to be 7/6 a ton, covering all work from and including cutting to when the silage is ready for feeding out.

Ensilage can be made from pasture grass, lucerne, millet, maize, sunflowers, and, indeed, any green crop. It has the following advantages:—

1. **It can be made irrespective of weather conditions.**
2. **There is practically no waste in feeding out, and very little in storage, as compared with hay.**
3. **Weedy crops, which would make poor hay, make quite good ensilage.**
4. **As a succulent feed ensilage will have a far better effect on milk production than hay. This is very marked during a dry spell, when the pastures have become short and burnt up.**
5. **As a feed for dry cows, particularly when near calving, ensilage is superior to hay.**

The main disadvantage of ensilage is that it is much weightier material to handle, but its advantages more than offset that.

Dairy cows in milk can be fed up to 30 to 50 lb. of ensilage daily, and 20-40 lb. daily would be a good ration for a dry cow. The concentrate supplement should be the same as with good-quality winter pasture.

An important point in regard to the use of ensilage on a dairy farm, and in particular on a town milk supply dairy, is that it should be neither stored nor fed close to the milk bail and as far as possible it should be fed out soon after milking is finished. Mouldy ensilage is definitely harmful to cows.

SUPPLEMENTARY GREEN FEEDS.

Maize, lucerne, oats, millet, barley, kale, and chou moellier are all crops

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in use in New Zealand as supplementary feeds for dairy cows when the pastures are insufficient. Lucerne, in particular, is a most valuable standby. Green maize is often "soiled," that is, cut in the field and fed out in a convenient place in a grazing paddock or a feeding shed. Cows as a rule are grazed on the other crops mentioned, and may also be grazed on green maize. Soiling means a larger yield from any given crop, and less wastage by trampling, particularly in bad weather, but it makes very heavy demands on the time and energy of the farmer. As a succulent roughage supplement, where hay is being fed as the main roughage, a green crop such as lucerne on which the cows can be grazed daily for a short period is excellent.

But a word here as to the condition known as "bloat." This is, of course, a blowing-up of the paunch from excessive gas formation. One of the commonest causes of bloating in cows is a sudden change on to rich green feed from poorer and dryer pasturage. The paunch is inflated by excessive gas formation, causing intense distress which may end in death by suffocation if the pressure is not relieved. One simple remedy which frequently gives relief is to tie a piece of wood smeared with stockholm tar in the mouth like a bit. This makes the tongue and muscles of the throat work in such a way as to cause the escape of the gas. When simple remedies give no relief recourse may have to be made to puncturing the paunch. The incision is made forward and downward at the centre of the triangle formed by the hookbone and last rib on the **left** side. In the tightly-expanded paunch in a "bloated" cow there is usually a small elevation at this particular spot, and the puncture can be made in the centre of this. A rapid decision is frequently necessary, and an ordinary knife may have to be used. But clipping of the hair and disinfection of the part before puncture, and the use of the trocar and canula, **which last should be in the possession of all dairy farmers for emergency use**, will all lessen the risk of septic infection afterwards. A purge (12 oz. Epsom salts and 1 oz. of ginger in two to three bottles of water) should always be given as routine treatment.

Prevention of bloating is on commonsense lines; i.e., when changing the cows on to lucerne grazing, for instance, commence with a short period at first, and do not put them on hungry. If turning the cows on after the morning milking, for example, a little hay should be fed first. It should be noted that a large amount of very cold green feed (e.g., on a frosty morning) when the cows are hungry can also cause bloating by chilling the paunch and so interfering with the natural churning movement of its walls. This results in that most difficult type of "bloat" to deal with where the gases are in small bubbles throughout the paunch contents.

It is desired to emphasise, at this point, that the use of the crops mentioned above as supplementary grazing is sound practice, beneficial to milk production, and with sound management methods cases of bloating will not occur.

ROOT CROPS FOR DAIRY COWS.

Mangolds, sugar beet, swedes, and turnips are all good feeds for dairy cows, furnishing the necessary succulence which may be lacking in the winter diet. Pumpkins which, though not a root crop, have to be fed in the same way, are also good. Two and a half tons of pumpkins, 1½ tons of mangolds, and 1 ton of maize silage are considered to be all of the same feed value. Turnips and swedes must be fed immediately after milking to avoid milk-taint. Climate and soil conditions being suitable, the sugar beet is the best root crop for dairy cows. The table below illustrates this point:—

	Sugar beet. Per cent.	Mangold. Per cent.	Turnip. Per cent.
Protein	1.2	0.8	1.0
Carbohydrates .	12.6	6.4	6.0
Fat	0.1	0.1	0.2
Total digestible nutrients ..	14.0	7.4	7.4
Total dry matter	16.4	9.4	9.5

Root crops and pumpkins must, of course, be put through a cutter or chopped up with a spade before feeding out to dairy cows. Failure to do this efficiently may result in choking.

CONCLUSION.

The dairy herd can produce the maximum of milk possible only if the cows "come in" in good condition. Spring calvers definitely require supplementary feeding to do this.

Other points to be noted are:—

1. **Whenever the natural grazing falls off, as in autumn and winter or during a summer drought (this last applies also to creamery supply herds), then the cow cannot give of her best unless her feed is supplemented accordingly, both by concentrates (meals, etc.) and by roughages (hay, ensilage, lucerne, etc.).**
2. **There should be no passengers within the dairy herd. This can be prevented only by a weekly weighing of the milk of individual cows, and checking the INCREASE in the amounts produced by the supplementary feeding.**
3. **Emphasis has been laid on the necessity for the feed to be "balanced," that is, for it to meet as far as possible the daily needs of the cow, both for the maintenance of her body and the production of milk. Mention has also been made of the desirability of at least a proportion of succulent roughage being provided and of the ration being palatable to the cow.**
4. **The addition of 1 per cent. each of salt and bone meal or bone flour to the supplementary concentrate mixture is also advised.**
5. **The importance of ample supplies of drinking water being available for dairy cows at ALL times.**

Radio Broadcasts

RADIO talks to farmers will be given from Station 1YA, Auckland, at 7.15 p.m. on the following dates:—

July 3—"Wartime Farm Problems in Britain," by Dr. I. D. Blair, Department of Agriculture, Wellington.

July 10—"Field Work for the Coming Month," by Mr. P. S. Syme, Instructor in Agriculture, Department of Agriculture, Warkworth.

July 17—"Poultry," by Poultry Instructor, Department of Agriculture, Auckland.

July 24—"Young Farmers' Clubs Session," to be arranged by the King Country Young Farmers' Clubs.

July 31—"Current Work at the Northern Wairoa Demonstration Farm," by Mr. E. H. Arnold, Instructor in Agriculture, Department of Agriculture, Whangarei.

Pig Industry Broadcasts

UNDER the auspices of the District Pig Councils concerned broadcasts will be delivered in July as follows:—

Auckland—1YA, July 20, at 7.15 p.m., "Crops to Grow," by H. E. Clark, Supervisor, Auckland District Pig Council.

Wellington—2YA, July 15, at 7.20 p.m., "Litter Production," by C. H. M. Sorensen, Supervisor, Taranaki District Pig Council.

Christchurch—3YA, July 20, at 7.15 p.m., "Answers to Questions," by Hector McIntosh, Supervisor, Canterbury District Pig Council.

Napier—2YH, July 13, at 7.30 p.m., "Care of Pigs After Weaning," by I. H. Owtram, Supervisor, Tairawhiti District Pig Council.

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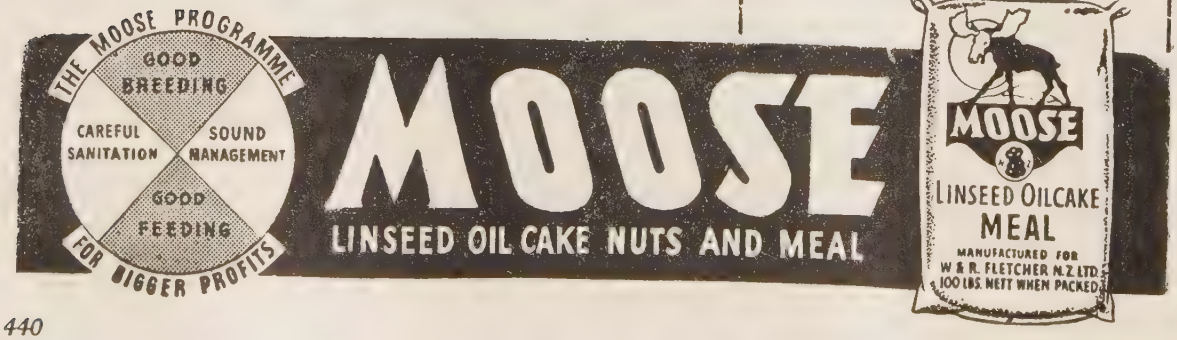

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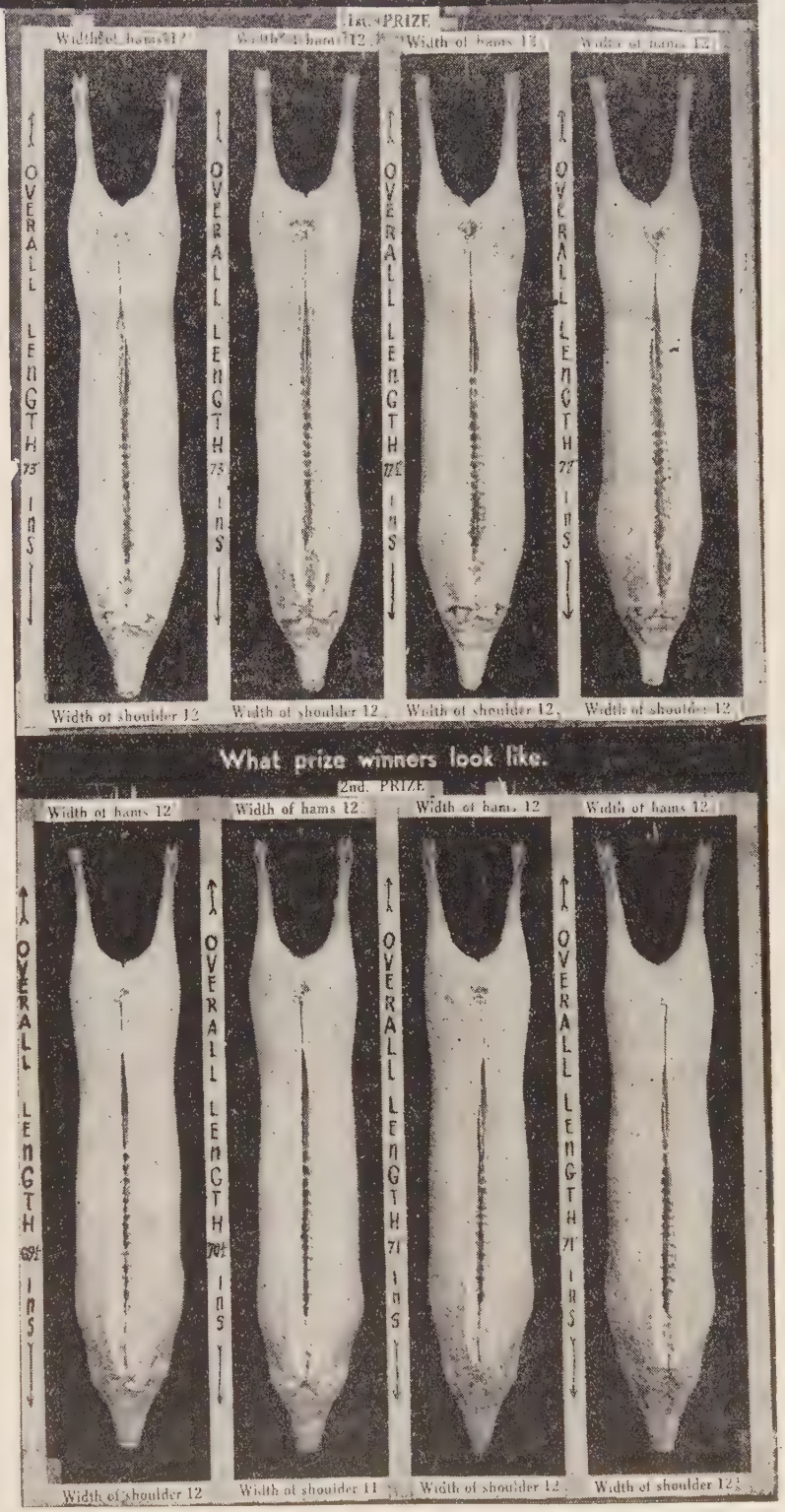
IT IS difficult enough when judging individual pigs, but when it is necessary to judge four pigs as a group the selecting of the best entry presents further complication. To the casual onlooker who views the pigs after the job is done it may appear that all kinds of irregularities have taken place and it is obvious to him, especially if he be a competitor, that he could have done a better job himself.

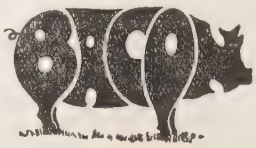
Over the past few years varying systems have been employed, all more or less alike except for minor details in regard to standards of measurement. The results achieved have been satisfactory, at least to the judges, but the standards of judging all competitions, whether it be one pig or a team, must advance from time to time if we are to benefit from the experience of previous competitions.

The world record baconer competition of 1,780 pigs staged last November at Westfield showed an amazing improvement in the quality of carcase and one could say without fear of contradiction that the worst entry exhibited would compare more than favourably with the best of our pigs 10 years ago.

This improvement in quality is the result of several factors, not least among them being the work of the National Pig Industry Council through its wider organisation of



CUT THIS OUT AND KEEP FOR REFERENCE.



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For Fifty years we have supplied everybody.

PIGS ARE WANTED FOR VICTORY

Our Prices at each of our Works are:—

ON 1st MAY, 1944,

THERE WILL BE AN ALL-ROUND INCREASE OF ONE HALF-PENNY PER LB. ON PORKERS AND BACONERS, WHICH BRINGS THE SCHEDULE TO:—

Prime Porkers	60/120 lb.	..	7 d.	per	lb.	"head	on"	weight.
Prime Baconers,	121/175 lb.	..	7¼d.	„	„	„	„	„
Prime Baconers,	176/185 lb.	..	6½d.	„	„	„	„	„
Prime Baconers,	186/200 lb.	..	5½d.	„	„	„	„	„

ON 1st JUNE, 1944,

THERE WILL BE A FURTHER INCREASE OF ½d. PER LB. TO COVER THE WINTER MONTHS, WHICH WILL BRING THE SCHEDULE TO:—

Prime Porkers	60/120 lb.	..	7½d.	per	lb.	"head	on"	weight.
Prime Baconers	121/175 lb.	..	7¾d.	„	„	„	„	„
Prime Baconers	176/185 lb.	..	7 d.	„	„	„	„	„
Prime Baconers	186/200 lb.	..	6 d.	„	„	„	„	„

ON 1st JULY, 1944,

THE SCHEDULE PRICE FOR PRIME PORKERS, 60/120 lb., WILL GO UP TO 7¾d., AND THIS PRICE WILL HOLD UNTIL 31st AUGUST, 1944, WHEN IT WILL BE REDUCED TO 7½d.

ON 1st OCTOBER, 1944

THE SCHEDULE WILL BE:—

Prime Porkers	60/120 lb.	..	7 d.	per	lb.	"head	on"	weight.
Prime Baconers	121/175 lb.	..	7¼d.	„	„	„	„	„
Prime Baconers,	176/185 lb.	..	6¾d.	„	„	„	„	„
Prime Baconers	186/200 lb.	..	5¾d.	„	„	„	„	„

ON 1st NOVEMBER, 1944.

FROM THIS DATE THE SCHEDULE FOR ALL CLASSES WILL BE AS FOLLOWS:—

Prime Porkers	60/120 lb.	..	7 d.	per	lb.	"head	on"	weight.
Prime Baconers	121/175 lb.	..	7¼d.	„	„	„	„	„
Prime Baconers,	176/185 lb.	..	6½d.	„	„	„	„	„
Prime Baconers,	186/200 lb.	..	5½d.	„	„	„	„	„

Call up our Buyer in Your District.

J. C. HUTTON (N.Z.) LTD.

FOR SWAN BACON AND HAMS.

Wellington, Frankton Junction, Eltham, Auckland, Christchurch.

district Pig Councils and Pig Clubs. The enthusiastic co-operation of the freezing companies and bacon curers has also played a very valuable part in providing generously by way of prize-money and placing all the necessary facilities at the disposal of exhibitors, without which it would be impossible to stage such a great competition.

Notwithstanding the uniformly high quality of this world record competition, it was obvious that there is room for improvement in the judging standards, the aim to be that of standardising the judging system for all baconer competitions held in the Dominion.

To this end, therefore, a meeting was convened of all parties interested in the judging of baconer carcase competitions, the personnel representing the Department of Agriculture, Meat Board, Pig Breeders' Association, National Pig Industry Council, freezing works, and bacon curers.

It was found that after discussion all were of one mind on most issues, the main exceptions being balance of side and back fat pointings. Accordingly, tentative proposals were put forward for practical tests which were carried out on the carcases of pigs entered for the recent competition of the Auckland District Pig Council. With the results of these practical tests before them, the system as outlined below was elaborated for use, it is hoped, in future baconer carcase competitions in New Zealand, until changing market needs or other circumstances require its amendment.

Linked with the drive for greater pig meat production is a stepping up in the tempo of these competitions, and immediately following the conclusion of the last competition in November last Messrs. W. & R. Fletcher (N.Z.) Ltd. instituted a further competition offering £400 in prizes. The field organisation of this competition is already completed, and the teams of pigs will be coming forward for killing in June. The judging will take place early in July, followed by field days to give producers a chance to see their pigs alongside the best in the Dominion. Special cups are being awarded by the U.S. Joint Purchasing Board and for these awards the teams are being judged on their suitability for the United Nations fighting services. An amended judging system will be in operation for this competition, and for the information of all competitors the following is its general outline.

Back Fat: It has already been pointed out that one of the primary purposes of all these competitions is to stimulate interest in carcase quality and for this purpose it seems obvious that producers at the field days should be able to gather from the winning pigs displayed a pretty accurate picture of what is regarded as the perfect pig

towards which they should strive. This is not really possible under the system previously in operation, which was based on grading, because top marks for back fat could be secured by a fairly wide variation in back fat thicknesses. Even if all pigs within this wide variation are equally suitable to the trade under present circumstances, there is no question that pigs which would be by no means ideal and in times of greater quality competition from other countries might not realise prime prices could be included for top marks under this system. Therefore, as a result of past experience, it has been decided that the judging will be based on a standard of measurement of back fat at the loin and shoulder in relation to carcase weights. For instance, top marks would now be secured by a pig of 145 lb. carcase weight if loin fat measurement was 15/16 in. or 1 in. and shoulder fat measurement was from 22/16 to 25/16 in. inclusive. Measurements of both loin and shoulder will include the thickness of the skin.

Farmers are entitled to the assistance and advice of the District Pig Council Supervisors. Pig producers have provided the funds to enable these Councils to be set up, and all farmers are urged to take every advantage of these facilities. Applications for assistance should be made to the Department of Agriculture or to District Supervisors as follows:—Whangarei (Box 131); Pukekohe (Box 32); Whakatane (Box 12); Gisborne (Box 316); New Plymouth (Box 131); Palmerston North (Box 80); Dunedin (Box 693); Christchurch (Box 639); Hamilton, Wesley Chambers.

Length: A suggestion was made for an external length measurement, and while this may be sound in some respects there is difficulty in fixing points for external measurement, as it is recognised from experience as necessary to have specified bones as the terminal points for any such measurements. Moreover, where heads were condemned or where there were differences in the tail cut or other manner of dressing external measurements could not be standardised. Therefore, it was agreed that the present method of internal length measurement from the pubis (rump mackle bone) to the junction of the sternum with the first rib was the soundest basis to continue.

Balance and Depth of Side: This is an important measurement, which in previous competitions was calculated on the smallness of the difference between the measurement at the flank and that at the brisket, the difference in this measurement being related to the weight of the carcase for points scoring. As any system based on differences is always complicated, and likely to be misconstrued, it was decided after experiment on a number of carcases, particularly those of the baconer competition held by the Auckland District Pig Council recently, that a more satisfactory method would be a comparison between the measurement of depth of chest as against the length of the carcase. In view of Dr. McMeekan's practical experience with the system in operation in Denmark, where baconer carcases are known to excel for balance of side and where it is considered that the measurement of the depth of chest should not be more than 40 per cent. of the length, a table of points based on this principle has been evolved.

Loin; Fullness of Meat: Points will be awarded for fullness of meat over the loin. Since this is the portion of the carcase latest in development, it is the external evidence of a well-finished carcase. This must be done by eye appraisal.

Shoulder: The judging of the shoulder must be done by eye appraisal by an experienced judge, the object being to ascertain as far as possible the actual amount of cheaper meat in a shoulder, by comparison with the rest of the carcase. It is unfortunate that it is impracticable in carcase competitions to take an accurate weight of the shoulder cut from the rest of the carcase, but experienced judges can accurately judge this relationship.

Ham: As the judging of hams involves consideration of three dimensions in curves, no practicable measurement system seems possible, and judging of hams by eye appraisal of an experienced judge will be continued.

This "CHAMPION of CHAMPIONS"

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Mr. W. B. A. Jonson's Jersey Calf, from Karakariki, which was judged the "Chambion of Champions" at the Waikato Summer Show, was reared on SERVICE CALF MEAL from birth. Build every one of YOUR calves into a profit-earning cow by feeding them on SERVICE—the calf meal that has PROVED itself a "Builder of Champions."

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Obtainable from all Storekeepers and the Trading Departments of Dairy Companies everywhere. Manufactured by BOND & BOND LTD., Auckland.

It is interesting to note that from the discussions on this matter a start has been made to minimise variation in the standards of judging hams by the compilation of photographic illustrations of both hams and shoulders with appropriate comments for less experienced judges.

All the aspects of the carcase for which points are positively given for high quality in judging any line on its merits as a carcase are outlined above, but there are still certain deductions which can be made for defects. These are enumerated later. The proportionate value of the positive points for good quality is as follows:—

	Points.
Length	20
Back fat at the shoulder	15
,, ,, at the loin	20
Balance and depth of side	10
Ham	15
Shoulders	10
Loin; fullness of meat	10
Points per pig	100

Deductions may be made as follows for disease, blemishes, and unevenness of weight:—

	Points.
Pleurisy rejects	up to 3
Other rejects for export ..	,, ,, 5
Condemned heads	,, ,, 3
Seedy cut	,, ,, 1
Blemishes	1 to 5
Unevenness of weight	Up to 5

For single pig competition a maximum deduction of 5 points may be made for the above. For group competitions the maximum deductable for blemishes and disease is 5 points for a single pig with a maximum possible deduction of 10 for the team.

Unevenness of Weight: For group competitions a maximum of 5 points may be deducted for unevenness of weight. Variation between the highest and the lowest weight in one team of over 10 lb. loses 1 point, over 14 lb. loses a total of 2 points, over 18 lb. loses a total of 3 points, over 22 lb. a total of 4 points, and over 28 lb. loses a total of 5 points, which is the maximum. Thus a team with a weight range of 130 to 145 lb. loses 2 points and 130 to 160 lb. would lose the maximum of 5 points. The maximum possible deduction that can be made from the average of any line is 15 points.

It is sometimes said that to deduct points for disease and blemish impinges harshly on the farmer without adequate facilities for housing and sheltering his pigs to prevent them from contracting disease. On the whole, however, it is considered that to encourage better housing and better management and feeding in order to build resistance is one of the most important objectives. Faulty castration, which leaves ugly sores, is an avoidable blemish, and pleurisy can undoubtedly be prevented by providing better housing conditions. Again, the penalty for unevenness of weight of the line in group competitions is not a serious penalty. By it the producer is judged on his ability to select a team of pigs within a given weight range. As even the large producer with innumerable pigs on the farm has to select his maximum team some months before they are sent to the works he does not receive a great advantage against the smaller producer. There is no doubt that when some hundreds of entries are competing, as in the case of the competition which will shortly be completed, the winning team should really be a first-class, even line, pleasing to the eye of the expert and layman alike. A recommendation was placed on record for all judges "that any bruises obviously not due to the fault of the farmer exhibitor should not be taken into account." From this producers will see that as far as is consistent with the production of a first-class line of pigs, worthy to represent New Zealand, their efforts to produce these competition pigs are really appreciated and their interests safeguarded.

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Safe . . . . Effective . . . . Economical

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All Chemists and Stores.

Manufacturers: Frank Jackson Ltd., 535 Parnell Road, Auckland.

SAFETY FIRST

MAKE THE FOLLOWING SAFETY PRECAUTIONS A HABIT AND PREVENT ACCIDENTS TO BOTH MACHINERY AND PERSONNEL.

1. Loose clothing is easily caught in power shafts, chains and belts, so replace all guards and keep clear when they are working.
2. Prevent the risk of serious accidents by putting BOTH the tractor and the implement out of gear when adjusting moving parts.
3. Do not hitch your tractor to an implement with one foot on the ground and the other on the clutch. If your foot slips you may be crushed between the tractor and implement.
4. Carbon monoxide is a deadly gas and gives you no warning of its presence. Therefore avoid running your tractor in a closed shed.
5. Bent plough beams, distorted frames, and broken shares result from faulty safety hitches on tractor ploughs. Keep them in good working order.
6. Correctly-set safety clutches prevent damage to implements. Stop as soon as they begin to slip.
7. Where possible, turn all implements by hand before putting them to work after storage. The mechanism may have rusted during the winter.
8. Every machine has its optimum working speed. If you exceed this speed excessive wear takes place, the implement is shaken to pieces and the quality of the work suffers.
9. Drain your tractor cooling system every night during the winter. Be on the safe side and avoid a cracked cylinder block.
10. Never reverse an implement if there is risk of damage, or attempt to overcome obstructions by taking a run at them. Something will break sooner or later—and it may not be the obstruction..
11. Always engage a low gear BEFORE going up or down a steep hill. You may not get another opportunity.
12. Periodically check nuts and bolts on both your tractor and implement. The use of the correct size of spanner will safeguard your knuckles and prevent damage to nuts.
13. Correct servicing and maintenance, plus the keeping of a log book, are SAFETY FIRST for your tractor and implement.

DON'T RISK IT —— IT MAY HAPPEN TO-DAY!

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THE STANDARD MARK
Issue In New Zealand

The Standard Mark, a facsimile of which appears on this page, should soon become familiar to the public as its application becomes extended over a wider range of commodities the details of the composition or manufacture of which have satisfied the New Zealand Standards Institute.

"The mark provides a hall-mark of quality which will establish trade on a basis of fuller mutual confidence and good will," states the Minister of Industries and Commerce, the Hon. D. G. Sullivan, in announcing the issue of the mark.

THE Mark has been registered in New Zealand and is now available under licence for use in connection with commodities which comply with relevant New Zealand standard specifications as determined by competent opinion representative of producer, distributor, and consumer interests.

"The use of the King's hall-mark on gold and silver wares since the 14th century as a means of protecting the quality standard of these precious metals against the competition of counterfeit lines, which simulate quality in appearance and presentation only, has enabled people readily to distinguish genuine articles from cheap imitations," states the New Zealand Standards Institute. "Likewise the purpose of the Standard Mark is to permit it to be used as a hall-mark of quality and utility. . . . In each case a similar method is adopted to ensure that these two distinctive marks remain an effective guarantee of the intrinsic quality and true description of the commodities in connection with which they are used.

"Alleged quality or certification marks have for centuries been used in various forms by numerous commercial interests. None of these, however, has closely adhered to the principles which governed the use of the King's hall-mark, and consequently they have proved much less effective. During more recent years the standards organisations of the respective countries have adopted standard marks which have met this deficiency. In adopting the Standard Mark and making it available for use as a distinctive quality mark New Zealand, therefore, is moving in accord with a sound, universal development. When affixed to commodities, invoices, or used on show cards, price tickets, and in advertising, the Mark will represent a reliable certification by the supplier concerning the nature and the quality of the goods on which, or in connection with which, it appears.

"Its use," continues the Institute's statement, "will assist to eliminate the loss and waste that arise from the use of a multiplicity of individual specifications different only in unimportant details, which, as compared with a common specification, necessitate shorter production runs and considerably increased overhead costs. This loss, together with that which results from the waste and handicap of superfluous variations in types, sizes and grades of commodities, due only to marketing innovations and caprices, substantially increases the cost of production and distribution without yielding any compensating gain.

"A further advantage that will accrue from the use of the Mark is the greater stability of the market which will result from the continuity of production made possible through the use of the relevant standard specifications, which represent a clear statement of the type and class of commodities that will best satisfy any subsequent demand of the respective distributive trades and the consumer public.

"The Mark as a symbol of a relevant standard specification will provide a common language between buyer and seller. It will not replace other guides to selection, but will supplement these and so make advertising more reliable, labelling more informative, and trade marks a more efficacious means of maintaining the prestige of the goods and the reputation of the business interests concerned.

"In connection with commodities for which no standard specification is in existence as a basis for the use of the Mark one may be developed upon request, with the co-operation of the affected trading and consumer interests. It should be emphasised that standard specifications do not remain static, but are a statement of the soundest trade practice that is known at a given time, which incorporates later advances as these are attained throughout subsequent periods. Contrary to popular misconception they do not curb inventive genius or fetter the expression of aesthetic values in style, design, or in any other way."

Fire Risk
Be Careful With Nitrate Containers

THE attention of farmers using either nitrate of soda or nitrate of ammonia (ammonium nitrate) is drawn to the fact that bags used for these fertilisers constitute a definite fire risk after being emptied, unless special steps are taken to eliminate this danger.

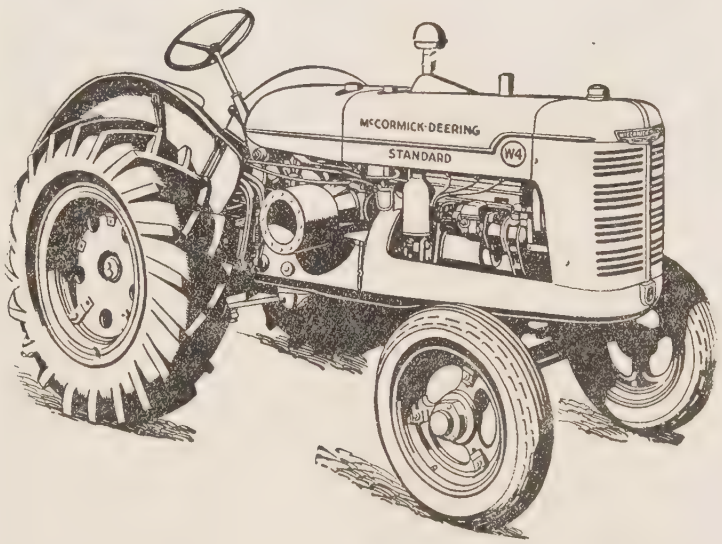
If it is intended to store these sacks either on the farm or to return them to a merchant, first of all shake all bags free of obvious particles of fertiliser. The bags should then be washed in frequent changes of water until clean.

Rather than run the risk of not taking the precautions mentioned above, it would be better from the point of view of saving other valuable materials to collect all bags of this nature together and burn them. This, however, is wasteful, and, if at all possible, bags should be treated as recommended above.

Even the home gardener who purchases in small quantities should be careful of how he deals with the containers of either nitrate of soda or ammonia. **If possible, destroy them—if not, see that they are stored where there is no risk of matches or cigarette ends being dropped on them.**

THE growing of cereals for greenfeed is comprehensively treated in the Department of Agriculture's new bulletin No. 208, "Cereals for Greenfeed," which is available free from offices of the Department at Auckland, Wellington, Christchurch, and Dunedin.

McCormick Deering



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2 and 3 FURROW SIZES

AVAILABLE FROM STOCK

They're up-to-the-minute versions of two popular models—every piece of them wrought to true McCormick-Deering tradition for quality, power, and economy. **Farmall H is available on steel wheels and rubber tyres. W4 is on steel wheels, but models are arriving shortly on pneumatic tyres.** Get your enquiries in quickly, for orders are filled in rotation.

Now you can get them

McCORMICK-DEERING LOW LINE LOW AND CONSTANT VACUUM MILKER—With constant pulsation speed.

It's the greatest advance in milking machinery since machinery first went into the milking sheds. It does **all** the milking . . . ends the need for stripping, because it actually maintains a constant low vacuum of 11in. at the teats, and 99% of the cows give all their milk to this vacuum. It defeats udder troubles caused by high vacuum.

Yes, it's a scientifically perfect unit, and made to the world-renowned precision standards of McCormick-Deering.
Write for information — send the coupon.

ORDER NOW—Mail This Coupon

Farmall M, W6 and WD6 (Diesel) 3 and 4 Furrow sizes and WD9 (Diesel) 4 and 5 Furrow Sizes

TO BE LANDED SHORTLY

If the tractors in stock don't answer your needs—hold on. All the above McCormick-Deering Tractors, **with pneumatic tyres,** are on their way, and will be arriving shortly.

FEATURING 5 FORWARD SPEEDS

All the above models incorporate 5 forward speeds, a feature that's exclusive to McCormick-Deering.

FARMALL A AND B (2-FURROW SIZE) ALSO COMING.

McCORMICK-DEERING,
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Please send me full information on

FARMALL A **W4**
FARMALL B **W6**
FARMALL H **WD6**
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McCormick-Deering Milker.

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Veterinary Notes for the Farmer

New Treatment for Necrotic Ulcers in Pigs

Necrotic ulcers originate in a wound or skin abrasion in any part of the body of a pig. Young animals are usually affected in the mouth and nose, and older pigs in the foot, shoulder, hip, seat of castration, knee, and hock regions.

THE germs causing these sores belong to a group of organisms known as *Spirochaetes*. While usually regarded as bacteria they have certain characteristics that suggest they are related to the *Protozoa*, a class of small animalcules resembling microscopic masses of jelly, some of which are also capable of producing diseases. In appearance the *Spirochaetes* are delicate, spiral-shaped parasites. They are very flexible and are able to move, coiling and uncoiling at the same time. The resultant ulcers usually appear as cavities eating into the flesh, often accompanied by a tumour-like growth of fibrous tissue, which sometimes assumes enormous proportions. The surface of the ulcer becomes coated with a thick crust, which when stripped away reveals a raw, bleeding surface.

Prevention

Affected animals should be isolated and treated accordingly. Where a large number of animals are affected a change of piggery site might be considered and attention paid to drainage and sanitation. Since the germs gain entry through wounds and abrasions it is necessary to ensure that injuries caused through fighting and barbed wire are reduced to a minimum.

Previous Treatment

Hitherto dusting the wounds with powdered tartar emetic (potassium antimony tartrate) has proved very reliable, following a preliminary cleaning of the sore with a scrubbing brush and a solution of Condy's crystals. But in some cases this treatment proves slow and tedious, especially in advanced cases associated with the tumour-like condition mentioned previously, and if a large area has to be treated, poisoning may result. It is also unsuitable where the mouth and jaw region is affected. For these reasons it was decided to try the effects of sulphanilamide and its related products.

Sulphanilamide's History

Sulphanilamide began some years ago with the discovery of an AZO—dyestuff (prontosil), which was said to exert a specific effect against a certain bacterial infection in mice. In 1935 it was found that this dark-red dyestuff was reduced in the body to a colourless compound. This substance was much simpler in composition and was regarded as being responsible for the good effect. To this compound the name "sulphanilamide" was given, while the word "sulphonamide" was used to cover the whole group of drugs.

Later a great number of derivatives were elaborated, the best known being M & B 693, or sulphapyridine.

The effect of sulphanilamide is to reduce the rate of growth of the bacterial cells; in high concentrations it may have a definite bactericidal effect. It became world-famous after the Japanese attack on Pearl Harbour.

Treatment

In using this substance in the treatment of necrotic ulcers in pigs sulphanilamide and sulphathiazole (M & B 760) were mixed in equal proportions with starch. The usual preliminary scrubbing of the sores with Condy's fluid was carried out, excess moisture mopped up, and the powder applied to the raw surface by means of a cotton-wool plug held in a pair of forceps. All crevices and pockets were dusted, special attention being paid to the junction of the sore and the normal skin. The actual treatment occupied only two or three minutes, and was repeated three times a week, and in some cases every day.

The application of the drug appeared not only to affect the exterior of the ulcer, but also to exert a remote effect on the deeper tissues. In all cases there was extensive sloughing with the formation of passages leading into the heart of any tumified tissue present. These passages served to expedite the discharge of pus from the deeper areas.

Generally the effect of the treatment in every instance was one of steady improvement, even in the most desperate cases, with complete recovery in a reasonable time. The animals rapidly put on condition, and the procedure

NECADOK DOCKING FLUID is

ANTISEPTIC, HEALING AND ASTRINGENT

It checks bleeding and promotes healthy and rapid healing.

NECADOCK IS NOT WASHED OFF BY RAIN AND IS RECOMMENDED FOR ALL STOCK WOUNDS.

1-gal. tins, **29/6**; ½-gal. tins, **17/7**; ¼-gal. tins, **9/8**; pint tins, **5/1**.
(1 Gallon will dock 1000 lambs).

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ASK YOUR MERCHANT TO OBTAIN FOR YOU.

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Stud Sheep & Cattle.

NOW

is the time to order.

Don't be unprepared for the essential spring job of identifying your stock, by delays which unavoidably occur in the rush of orders received in the Spring. Let us have your order and we will let you have delivery on your specified date. Late orders will be substitute material.

THE FARM-ACY

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'PHENOVINE'

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Cooper's Phenothiazine
WORM DRENCH POWDER

New, safe and most efficient remedy for worms in stock, particularly sheep.

Removes more worms in ONE DOSE than any other remedy.

Use "Phenovine" in your dosing programme and improve results. Ask farmers who have used "Phenovine."

Registered pursuant to Stock Remedies Act, 1934.

Obtainable from Merchants

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adopted was not laborious and not expensive. The actual amount of powder used in most cases did not exceed an ounce.

Typical Cases

In conjunction with Mr. I. H. Owtram, Supervisor of the Tairawhiti District Pig Council, who has taken a great interest in the procedure from the outset, and who treated the majority of the cases personally, some typical examples are briefly outlined, the first case being treated as long ago as December 4, 1942.

This was a porker with an ulcer 6 in. in diameter, involving the whole of the left side of the head, accompanied by a tumour-like formation as large as a man's clenched fist. The treatment was applied three times a week, and a complete cure was effected by December 22. This result was so encouraging that a severer case was undertaken, the subject being a large boar with a sore extending over the greater part of the left flank. Recovery was steady and uneventful.

Recovery in some cases has been extraordinarily rapid. Mr. Owtram notes one case where there was a circular swelling as large as a golf ball on the side of the leg, and which disappeared entirely within a week. He also records an incident where a large porker in the Wairoa district was wounded in the right shoulder by a truck. The injury turned septic, and the entire anterior half became swollen. The wound was treated with sulphanilamide in the usual way, being dressed daily. A fistula about 6 in. in depth gradually formed, and a complete cure was effected in four weeks.

A small pig just past the weaner stage became affected on the forehead, a circular ulcer extending to both ears. After a preliminary cleaning the surface of the frontal bones was disclosed. Six weeks' daily treatment resulted in the bone being covered once again with normal skin and hair, and the only permanent disability was the inability to hold one ear erect.

The supply position in regard to the use of the sulphonamide drugs for animal treatment has been relaxed to some extent, and owners requiring sulphanilamide can obtain it by means of a prescription in the usual way.

Summary

It is claimed that this treatment has the following advantages:—

(1) **Freedom from poisoning.**
(2) **Possesses rapid action.**
(3) **Treatment is simple and requires little time.**
(4) **Good response of apparently hopeless cases.**

—R. E. ALEXANDER, M.R.C.V.S., Veterinarian, Gisborne.

AT THE *FIRST SIGN* OF

CHILLS and FEVER

IN ALL FARM ANIMALS

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Mangolds are useful both for pigs and dairy cows. The crop keeps into the early spring.

Sugarbeet is probably the best crop for pig feeding; both tops and roots are highly palatable. The crop requires a deep soil.

Swedes are very useful for winter feed for the dairy herd. Not sufficiently palatable to fatten pigs but with meatmeal form a good maintenance ration.

Preparing Ground for Spring-Sown Fodder Crops

With the demand for increased production during the year to come, there is need for farmers to grow greater areas of root and green fodder crops to maintain production during dry spells in the summer and autumn and during the cold weather in the winter when pastures are less productive. Root and fodder crops are late spring and summer sown and consequently the preparation of the ground for them should commence now or early next month.

DAIRY farmers need not only to produce crops for feeding their dairy stock but must also provide food for maintenance of their pigs in the winter and to finish off autumn litters. The provision of feed of the latter kind is now all the more important in view of the difficulty of purchasing sufficient supplies of grain and meatmeal and the need for increased production of pigmeat. In the winter there is scarcity of separated milk, and if the most is to be made of the autumn litters the food supplies required are only a little less than in months of peak production. On most farms the pig population is insufficient to deal with supplies of separated milk available in the late spring and there is often not enough food provided even to maintain stores properly in the winter months. Consequently prices for stores fall in the autumn and are correspondingly high in the early spring. By provision of ample supplies of suitable foods dairy farmers may not only maintain their own pigs but are also in a position to buy stores cheaply from their less fortunate neighbours in the autumn and are almost certain to reap a handsome reward after wintering them on home-grown foods.

Variety Important

The value of different crops for pig feeding depends on their palatability and feeding value. Young pigs particularly do better on a variety of foods and do not do well if fed only on foods of a bulky nature. Because of this swedes and mangolds should not be the only fodders grown for pigs. Sugarbeet, carrots, pumpkins, and marrows, because of their greater palatability and better feeding value, are more suitable and will more than maintain the pigs. Soft turnips, on the other hand, are useless, because pigs will not eat them. Whatever is grown in the way of these crops much better results are attained if grain and meatmeal are also fed. In the dairying districts maize is generally the most suitable crop to grow to supply the grain because of its high yield, ease of harvesting without machinery, and because the lateness of the harvest lessens the storage problem. Maize can also be utilised in the green cob stage if separated milk supplies prove inadequate at that time.

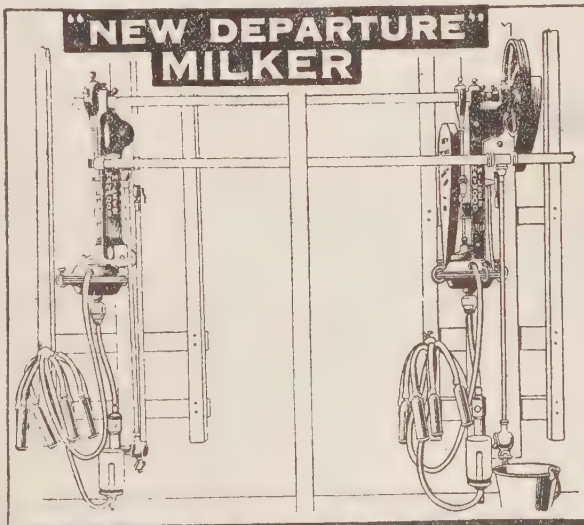
In feeding pigs it can be taken generally that 10lb. of roots, pumpkins, or marrow, or 1lb. of grain is equal in feeding value to one gallon of separated milk, provided the lack of protein in the roots is made good by feeding meatmeal. Since store pigs, dependent on size, require 3 to 5lb. of grain daily for maintenance and normal growth, it will be seen that large areas of crops are not required. On most dairy farms an acre of different kinds of suitable crops near the pig runs will produce sufficient for the pigs, but in view of the suitability of these crops for feeding other stock on the dairy farm it is advisable to grow ample supplies.

In addition to feeding pigs home-grown supplies of grain will prove useful in supplementing food purchased for feeding poultry. The acute shortage of eggs can be met only by increased production of this commodity on dairy, sheep, and mixed farms. The major production of eggs has always been achieved on these farms and not on farms devoted entirely to the raising of poultry.

On sheep farms the preparation should commence shortly for the sowing of swedes, soft turnips, rape, and chou moellier. In the colder and drier districts it is essential that ample supplies of these crops be grown to finish off the lambs and winter the ewes and other sheep.

Tillage

Where the land has previously been in crop or is lying fallow it should be ploughed deep. Where the land is in grass it should be skim ploughed or the turf disintegrated by surface workings with suitable implements such as discs. If skimmed, the soil should be left undisturbed for a few weeks and then disced to pulverise the turf and deep ploughed. If the turf is not skim ploughed or disced and only deep ploughed the inverted sod will require repeated deep discings in the early spring when the soil is in a fit condition. If no skimming is done and the soil is light and friable, it will require rolling on the furrow prior to the discing. In all cases after deep ploughing the land should be left undisturbed until the soil is sufficiently dry for subsequent cultivation. On



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heavy soils if ploughing has been carried out early enough, sufficient consolidation may be obtained without using the roller. With light soils, however, rolling on the furrow is necessary and should be repeated before and after sowing, particularly if small seeds are sown. The degree of fineness which is to be achieved by use of discs, cultivators, and harrows depends on the kind of crop to be sown. Crops with small seeds such as turnips, carrots, and particularly beet and mangolds require a very fine and firm seed-bed, whereas maize and pumpkins can be grown successfully on a seed-bed where the soil, though firm and fine below, is fairly lumpy on the surface. If difficulty is experienced in making the soil fine by surface workings, it will be found that after re-ploughing the desired condition can be readily attained. On heavy soils special attention should be paid to the state of the soil before cultivation is carried out. If the soil is too wet, cultivation will produce harmful results, whilst if too dry, it will not be effective.

Suitable Soils

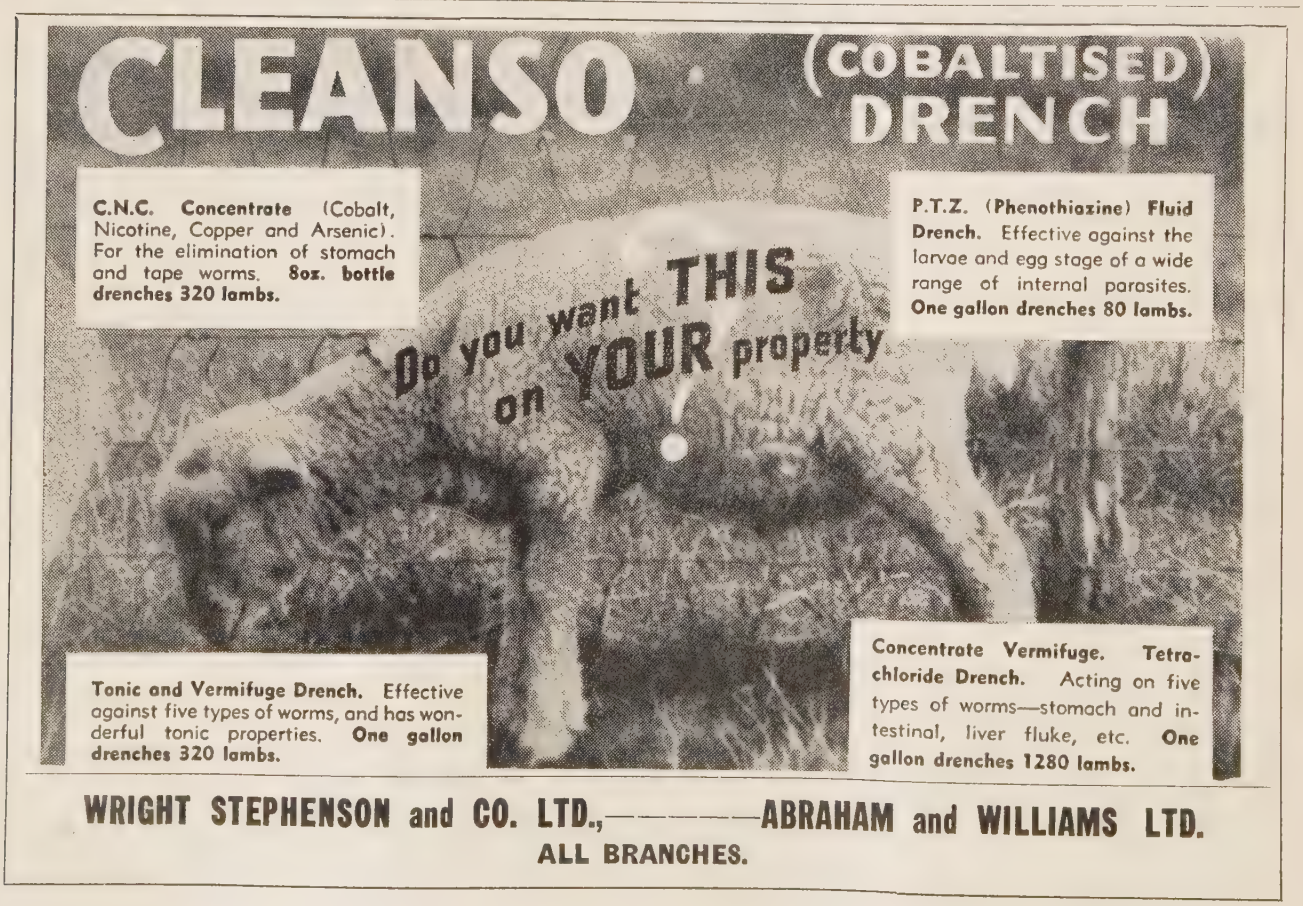
In growing fodder crops care should be taken to select fields with a suitable soil for growing crops. Pastures requiring regeneration on soils not suitable for cropping are better sown down after cultivation without preliminary cropping. If the crop is to be carted to the cows or pigs it is better to locate it close to where it is to be utilised. In moist climates fertile loams are most suited to the growing of crops, whilst in dry climates clay loams, on account of their moisture-holding capacity, should be chosen. The area must be well drained and if the crops to be grown require much hand weeding, the soil should be fairly free of weed seeds. Fodder crops do best after pasture or a crop following pasture, but the farmer should avoid sowing crops after previous crops of the same family. Root crops suitably follow maize, cereal green-feed crops, or potatoes, whilst spring-sown cereals suitably follow roots or potatoes.

Drainage

BECAUSE almost all plants commonly used in agriculture will not thrive with their roots in stagnant water it is desirable to drain land so that the water-table is kept below range of their roots. In the autumn all open drains should be cleaned so that they will perform this work efficiently during the wet winter months, following which a commencement should be made in installing a new drainage system on the next area requiring drainage.

Any person taking a journey, particularly a railway journey, throughout New Zealand must be impressed by the yet undeveloped state of many parts of it. He will note numerous small areas which obviously require drainage, and which, if drained, would make a contribution to our national wealth and the production of food so badly needed at the present time.

Many farms have reached the state where the dry land has been developed to a reasonable state of efficiency, and there remains only the wet areas requiring attention. Because of their higher potential production in dry weather such areas when broken in will prove helpful in maintaining continuity of production on the farm. On dairy farms herd production is much improved if drop in production through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dry weather is minimised and fat lambs not fattened off the mother can be finished only if adequate high-quality feed is available after weaning. The farmer may meet the difficulty by growing special crops, such as rape, to finish off his lambs, or green maize and soft turnips to maintain the production of his dairy herd, but by draining and sowing his wet areas to pasture he may achieve the same purpose at less cost on an annual basis.

He may also find that the drained areas will be productive at other times of the year when pastures on his dry land tend to fail. In other words, with such areas at his disposal he will find all grass farming an easier proposition. Also the drained area is more certain to produce a return from the sowing of certain crops which require a rich, moist soil.

Fertility First

Before drainage is attempted the fertility of the soil should be ascertained to see if the project is worthwhile. Raw peat soils of a depth over 6ft. are usually not worth draining because it is most difficult and takes a long time to consolidate deep peat, and until consolidation is effected the production is bound to be very small. It is probably quite true to say generally of such soils that the work and expenditure on them have so far been much greater than the returns. Undoubtedly if the same expenditure and energy had been devoted to the more fertile undrained areas, the production of this country would have increased at a faster rate and would have been greater today.

Now that the larger areas of rich soils such as the Hauraki and Rangitaiki Plains have been drained there are probably no large areas of fertile soils which can be drained with safety, for most of the areas left are either too expensive to drain or more useful as ponding areas. Therefore, for improvement by drainage we must largely look to the drying out of those small areas of which there is evidence on almost every farm in many districts. Each area requiring drainage has its own problems and may require different methods of attack.

If drainage is going to prove difficult, consideration should be given to the establishment of useful plants such as *Glyceria aquatica,* Mercer grass, or *Phalaris arundinacea,* which thrive under wet conditions. If drainage is to be attempted, the area should be explored for the source of water causing it to become waterlogged. If this can be located, it will frequently be found that it is easier to cut off the flow of water at its source than to run drains throughout the area. Sometimes water will seep out from a hillside from one point, and, spreading out in the shape of a fan, will cause acres to become waterlogged. By digging down and locating the source of the spring causing the trouble and digging a drain deep enough to collect all of the water it can be led away to discharge harmlessly into a creek or drainage system.

Frequently water will seep in a line along a hillside generally just where it meets the plain below. This water can be collected by a drain running along the hillside dug deep enough to prevent the water seeping beneath it. This type of drain is better left open, since some of the water is fairly certain to pass over the tiles and escape to the flat land or valley below. Having cut off the water in this manner the effect should be observed and consideration given to making further drains on the flat land below.

Where the water cannot be cut off in this manner or where despite the cutting off of the water the flat land below is still too wet drains will be required to be laid in the lowest and wettest parts to carry away the water.

Plan the Drains

Before commencing, however, the system of drains must be properly planned, and the first thing to consider is the outlet through which all the drained water must ultimately escape. Commencing at the outlet the line the main drain will follow should be noted. The digging of this should then commence at the outlet. Unless a body of water to be carried away is very large this need be made only about 3ft. deep and just wide enough for the drainers to perform their work in comfort. The normal drain for laying tiles is 14in. wide at the top and 10in. wide at the bottom. The bottom of the trench must be even, with sufficient fall for the water draining away to move freely and yet not so fast as to scour away the bed of the drain. The tiles should be laid as straight as possible.

If manuka fascines are to be used, they should be tied in bundles about 9in. in diameter and the drain at the bottom made 2 in. or 3 in. narrower than this, so that when the fascines are laid there is a gap below them through which the water may flow freely. The fascines should be laid commencing at the upper end of the drain and with the brush overlying the butt of the previously-laid fascine. Sometimes slabs of wood or logs are used instead of fascines, and placed in different ways to provide a channel through which the water may run. After the tiles or fascines are laid the excavated soil and subsoil should be replaced, at first carefully so as not to displace the tiles if these have been used. Once the main drain has been completed the digging of subsidiary drains may be left until the full effect of the main drain is observed. Subsidiary drains should meet the main drain at an acute angle so as to interrupt the flow of water in the main drain to a less extent.

Winter Pasture Management

NEW PASTURES.

SPECIAL care should be taken in the management of young pastures. Those sown in the early autumn make rapid growth in the winter and stocking must be carried out so that the grass is kept reasonably short and yet so that a minimum of poaching occurs. This is best done by turning in relatively large numbers of sheep or light cattle for short periods, removing them as soon as the grass has been moderately and evenly grazed. The stocking should be carried out as much as possible during spells of dry weather and the grass should not be allowed to grow too long between grazings. If the spell between grazings is made too long, clovers are likely to be suppressed and since the establishment of a high-class sward is dependent on a good cover of clover in the early stages of the pasture's life, particular attention should be paid to this in grazing young pastures, especially in the winter and early spring.

Dairy farmers frequently shut up young grass in the autumn to provide growth for feeding in July to the early-calving cows. If the field is not shut up for too long a period, little or no harm will result, but if the field is shut up so that a long growth of grass remains ungrazed for a long period, many of the clovers may die, the subsequent cover of clover may ultimately prove insufficient for the pasture's needs, and the pasture may suffer seriously in consequence. In districts with mild climates new grass shut up in May will provide a grazing in July, and, if the grazing is moderate, a subsequent one in late August. Thus to provide most benefit from the grazing and yet not harm the new pasture a dairy farmer in most parts of the North Island should aim to graze a young pasture sown in March at least three times in winter—in May, July, and late August.

On sheep farms there is little danger of the young sward being given too long a spell between grazings, but

the reverse frequently occurs. The new pasture will give greater production if it is allowed a spell between grazing and in winter on sheep farms a spell of 3-4 weeks is desirable. On sheep farms also there is danger of grazing too severely. Hard grazing is detrimental in that it punishes the better grasses and brings about their replacement more or less by weeds and inferior grasses and it also affects detrimentally subsequent production.

By judicious grazing in the winter and early spring no pasture plants will have been destroyed by poaching, the clovers which have established will not have been suppressed or killed by allowing the grass to grow long for a lengthy period, the grasses will not have been unduly punished by severe and continuous grazing, and a good cover of the ground will have been secured, which will prevent invasion by weeds and inferior grasses and will conserve soil moisture in the dry periods that may follow.

It is important to treat young pastures as well as possible with fertilisers, and, if possible, an extra dressing in the spring should be provided in regard to autumn-sown ones.

OLD PASTURES.

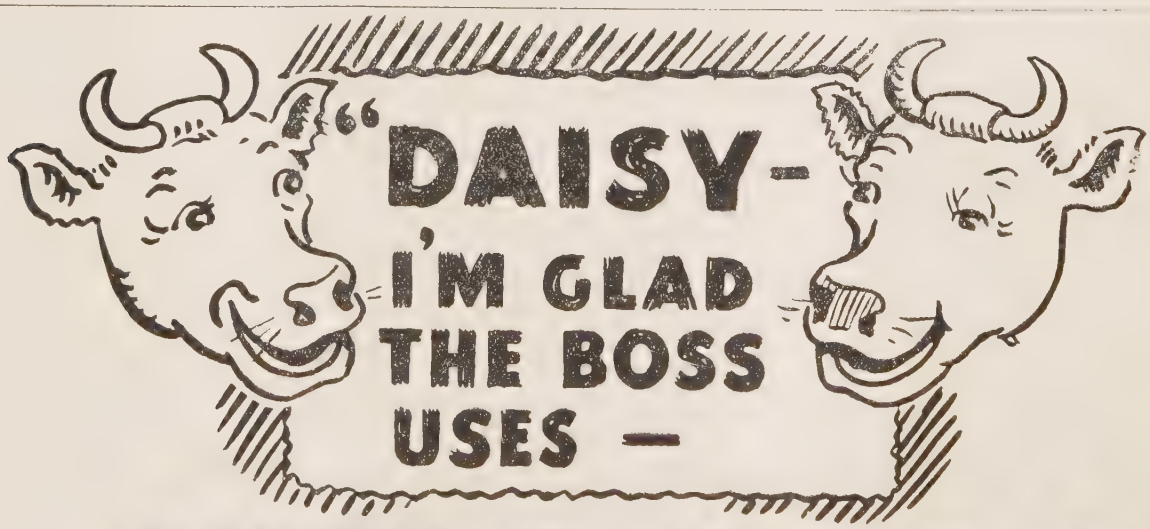
In discussing the provision of winter feed for dairy cows in the notes for April, reference was made to the shutting up of pastures in rotation in the autumn to provide a growth of grass to feed to the early-calving cows.

By June, when the first calves usually arrive, the grass in the earlier shut-up fields will be about 6 in. high and ready for grazing. Some of the more fertile portions of the field may show growth 12 in. high. Usually the cows as they calve are given about two hours' feeding with free range over the field, but it is better to treat the grass as a fodder crop and feed it off in breaks, using an electric fence for this purpose. The longer portions should be selected for feeding off first, and the cows should still be permitted to graze for short periods only to conserve this valuable milk-producing grass and limit its destruction by trampling.

If the fields are grazed too bare, there will be little or no subsequent winter growth from them, but if grazed down to about 3in. and shut up from stock, one or two subsequent grazings will be produced for feeding in the winter. When the longest growth has been grazed down to the 3in. level the next break for feeding off will be chosen either from the same field or another, depending on the length of feed. If the feed is allowed to grow too rank, the undergrowth will decompose, become unnutritious, and cause musty flavours in the cream, besides causing too much suppression of the clovers.

Marryatt at Ruakura has shown that fields shut up for winter grazing tend to become, after about two seasons, grass dominant, whilst in fields grazed bare in winter weeds, clover, and sweet vernal become dominant. In districts where feed flavour in cream is a problem in the spring farmers can take advantage of the knowledge. Bruce Levy has shown that feed flavours result from cows feeding on pastures containing much clover during the few hours prior to milking. Farmers should therefore place the cows on the fields which are grass dominant in the daytime, particularly in the afternoon, and permit them to graze the other fields only at night time and mornings. Owing to the feeding habits of the cow there is less danger of feeding occurring close to milking time at night and hence it is safer to graze pastures containing much clover then.

—J. E. BELL,
Acting Land Utilisation Officer, Wellington.



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In the Orchard and Vineyard

Orchard Notes

Preparation for Spring

THE main work of winter pruning pip and stone fruit trees should be pushed on as expeditiously as possible. Every opportunity should be taken of fine weather to complete this important operation, following which a general clean-up of the orchard should follow.

Delay in finishing off the pruning often means that some of the smaller and what may appear less important practices are neglected.

Prunings should be gathered up and burnt as well as mummied fruits which would be a source of infection during the coming spring. For those who prefer to burn up the prunings as they go a low two-wheeled iron frame, on to which is bolted an empty 44-gallon drum, opened lengthwise, makes a suitable incinerator. This, in conjunction with the use of pruning sheets, saves much time and labour after the operation of pruning is completed.

Cultivation and Manuring

Preparation for spring cultivation should be in hand so that by the time the growth begins the land should be in good tilth and trees dug round. Applications of manures vary according to type of soil, tree growth, and local conditions, but to maintain production and quality careful consideration should be given to the manurial programme. As it is necessary to spread and apply certain of the fertilisers used prior to cultivation it is essential that a programme of work should be in mind to allow each operation to go ahead without delay.

Overhaul Spray Outfits

As on most orchards some early spraying has to be carried out time can be profitably spent on an overhaul of the spray outfit in readiness for this. Many types are in use today and in some districts the "crawler" type is becoming very popular.

However, no matter which is used, a good overhaul of the outfit is essential and may avoid unforeseen delays during the application of a spray at a critical period.

Worn or broken parts should be replaced and a good oiling and clean-up are essential; faulty hose connections and leaky taps should be repaired or replaced. The difficulty under present conditions of procuring certain essential parts and replacements calls for extra care and attention to the outfit in present use.

Spraying

During pruning operations the observant operator will notice infections of scale insects, red mite eggs, etc., which become serious if not controlled. An application of winter red oil at 5 per cent, concentration is recommended during the dormant period and before any sign of bud movement. Any indication of San Jose scale in the orchard should be systematically attacked, for it is a costly pest to eliminate once it spreads.

Stone fruits are among the first to receive attention. For leaf curl (*Taphrina deformans*) on peaches and nectarines, bladder plum (*Taphrina pruni*) on plums, and shot hole (*Phyllosticta prunicola*) on apricots Bordeaux mixture 5—4—50 is the recommended fungicide to apply as soon as the fruit buds show signs of beginning to swell.

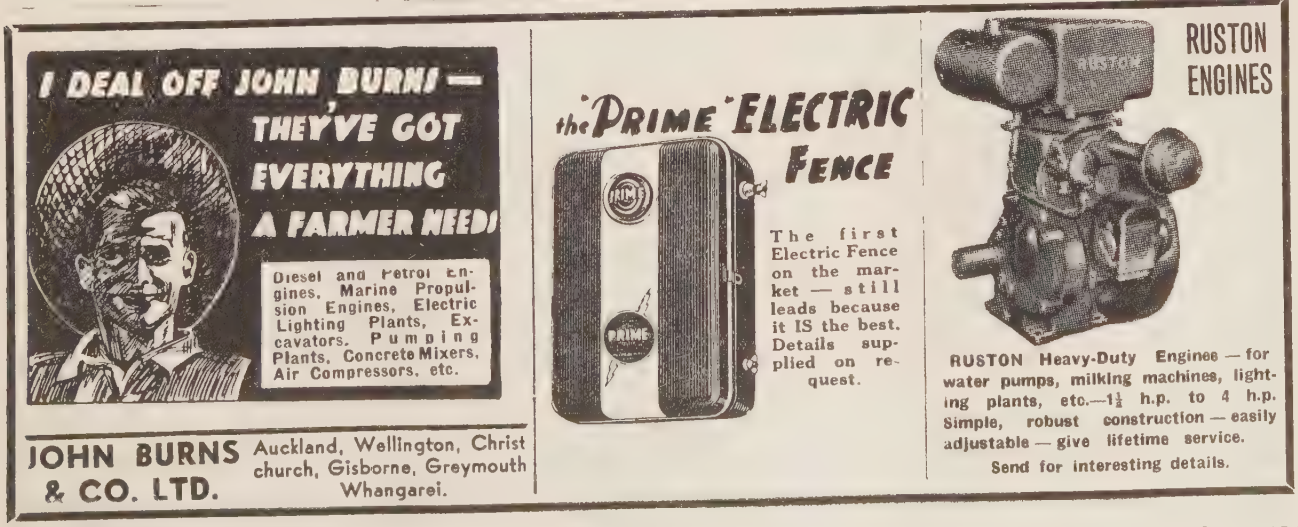
As in all spray applications all tree parts should be thoroughly covered. Good pressure, coverage, and volume are essential for efficient disease and pest control.

One application of Bordeaux mixture is usually sufficient to control these fungous diseases on stone fruit trees, but some more susceptible varieties may need two. The second should be applied when the buds are showing pink at a concentration of 3—4—50.

Planting and Replacement

Trees required for planting new areas or for replacements should be on hand and heeled in to obviate any drying out of the roots. Laid singly in a deep furrow of light, moist, well-drained soil in a shady position is the ideal way of holding trees until required.

The land to be planted should be well prepared beforehand by breaking up to a good depth and a fine tilth maintained. If the area is inclined to be wet, planting should be delayed until this position improves and attention given to adequate drainage. Too much attention cannot be given to the selection of the trees and if possible a personal visit should be made to a reliable nurseryman with this object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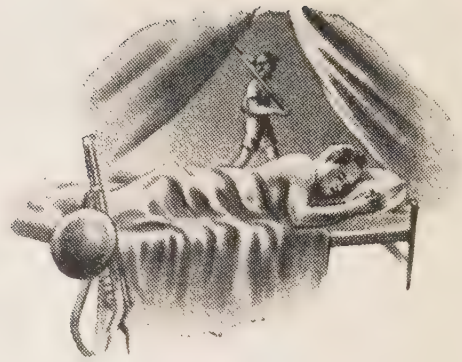

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in view. The trees should have a good healthy appearance with clean bark and be of regulation size to indicate free growth and matured wood. Gnarled or knotty roots in a young tree are a general sign of insect injury or unhealthy growth.

When planting all broken or damaged roots should be trimmed and after the tree is set firmly and securely in position the top may be pruned back as required.

To assist the young trees in making a good start a light application of ½ lb. of blood and bone manure can be made at time of planting.

Do not be afraid of digging the hole too big when planting. Spread out the roots and firm the soil between the roots.

Shelter

Most established orchards are well equipped with suitable shelter belts. Provision for this, however, should be made where new areas are to be planted. The value of shelter for all orchard trees is inestimable for protection from prevailing winds of trees, fruit and foliage throughout the growing period.

Orchard Records

The advantages of keeping complete records of activities carried out in the orchard are many and will enable growers to obviate repeating any error previously made.

Records of spraying dates, mixtures and quantities used, weather conditions, dates of manurial applications and quantities applied, production figures of individual blocks, etc., all go to prove to the owner on just what basis he is working, whether economic or uneconomic, and also assist him to form a working programme for the coming season and place orders with confidence for supplies of materials required.

—R. E. BINFIELD, Orchard Instructor, Hastings.

Citrus Notes

Spraying

A BORDEAUX spray, 3-4-50, applied in June, gives the best protection against citrus brown rot infection. Advantage should be taken of a dry spell of weather to be sure of getting a thorough and lasting film of spray on both fruit and foliage. It is inadvisable to spray in late afternoon during the cold, damp weather of winter. Coverage of branches nearest to the ground is essential, as brown rot spreads from the ground upwards, and all-over cover should be given to trees in orchards which have been seriously affected with brown rot in previous seasons. It is worth remembering that lemon trees, especially, produce the best quality and greatest quantity of fruit within reach of a picker working from the ground.

A recommended spray schedule for citrus trees, which appears on page 7 of the New Zealand Department of Agriculture Bulletin No. 161, is reproduced here:—

Period of Application.	Treatment.	Disease or Pest.
Pre-blossom of main crop (October)	Bordeaux 3—4—50.	LEMONS ONLY: Verrucosis, melanose, grey-scab, wither-tip.
Petal-fall of main crop (November)	Bordeaux 3—4—50. Acid lead arsenate 1½ lb. to 100 gals.	As above AND leaf-roller on both lemons and oranges.
Late December	Bordeaux 3—4—50.	LEMONS ONLY: Fungous diseases. ORANGES ONLY: Leaf-roller.
Early January	Acid lead arsenate 1½ lb. to 100 gals. Summer oil 3 per cent.	LEMONS AND ORANGES: Red scale, etc., and thrips.
Early February	Nicotine sulphate—1—800. Summer oil 3 per cent.	ORANGES AND LEMONS: Red scale.
Three to four weeks later		
Petal-fall of autumn crop—i.e., early May	Bordeaux 3—4—50.	LEMONS AND ORANGES: Fungous diseases.

While this programme of sprays is suggested, and may be accepted, as a general basis on which growers can operate, there are certain variations and modifications necessary in particular circumstances. It is intended, in these notes, to deal in more detail with some of the conditions under which departure from the basic schedule may be desirable.

The recommended schedule is designed to protect citrus trees from the ravages of the principal diseases and pests amenable to spray treatment in New Zealand. Efficient application of the sprays at the times recommended may be expected to control even rather serious attacks by these pests. It should be noted, however, that the timing of sprays is related to stages of development of the trees or crops, or of the pests themselves, rather than to specified dates. Rainfall, general humidity, and temperature, which conform to a general cycle each year, are yet subject to seasonal variations of sufficient importance to advance or retard growth stages of trees and, also, the dates upon which diseases and pests may appear. Corresponding adjustments to the timing of spray applications must be made, obviously, to strike at diseases and pests at stages when experience has indicated they are most vulnerable. Also, while commercially clean orchards may not demand rigid adherence to the full spray programme, there will be others requiring special attention, possibly with additional sprays, to combat a particularly serious outbreak of one or more diseases.

Seasonal Work

Spray with Bordeaux mixture, 3—4—50, to control citrus brown rot.

Prepare for spring plantings of citrus trees and orchard shelter trees.

Harvest New Zealand grapefruit for marmalade purposes, and keep lemon picking up to date.

Study of the schedule reveals that disease control may be divided into three main seasonal sections:—Spring Bordeaux sprays for fungous disease control; summer oil sprays to dispose of insect pests—chiefly scales; autumn or early winter Bordeaux applications again covering fungous diseases. Additions of arsenate of lead and nicotine sulphate may be found necessary, at the stages recommended, to control leaf-roller and thrips respectively.

The first group, spring Bordeaux sprays, especially important for lemon trees with spring the main period for spread of verrucosis, is frequently reduced to one spray at petal-fall. In clean orchards this one application

serves, but where verrucosis is at all prevalent the pre-blossom or bud stage Bordeaux gives excellent results, while the third spray, late in December, gives additional insurance against carry-over of disease. Arsenate of lead added to the petal-fall Bordeaux may be necessary to deal with leaf-roller, especially on New Zealand grapefruit and oranges. If more orange and grapefruit growers used a spring Bordeaux, there would be fewer melanose and grey-scab markings on the fruit later in the season.

The second group, summer oil sprays dealing with scales, may normally be confined to one application in late February or early March. To reduce scale population on badly-infested trees use two oil sprays, about late January and early March. Nicotine sulphate and arsenate of lead may be necessary, as recommended, for control of thrips and leaf-roller. Extension of the summer oil group of sprays by an application at 3-100 about the end of April is necessary where white wax scale has appeared. Unfortunately, earlier sprays do not deal effectively with that pest.

The third period, in clean orchards, requires only one Bordeaux spray, aimed chiefly at protection against brown rot infection, and applied with greatest effect during June. Should verrucosis be present, two sprays, in early May and during June, will be advisable on lemons, but the first spray is not imperative on oranges or grapefruit.

Meyer lemons nearly always require a full Bordeaux programme, spring and autumn, to protect them against verrucosis.

Spraying Notes

Use plenty of pressure, discard coarse and worn nozzle discs, and avoid working with nozzles too close to young fruits.

Bordeaux sprays for control of fungous diseases should thoroughly wet all parts of the trees from the trunk upwards.

With arsenate of lead and nicotine sulphate sprays give special attention to foliage and fruit.

For general scale control with oil thoroughly cover trunk, limbs, and twigs, as well as foliage, but for white wax scale concentrate on leaves and small twigs.

Don't spray late in the evening, especially if conditions are inclined to be damp.

Try to avoid spraying in high winds.

Always spray thoroughly. Check up on coverage occasionally, even if you do all your own spraying; you may find you are missing patches or not covering under surfaces. Coverage and timing are essentials of good spraying.

Planting

Don't buy inferior trees. Wait another season, if necessary, to get good ones with a chance of repaying the care to be devoted to them.

Get your trees budded high—knee high, if possible. Bark diseases usually start on the trunks of the trees, at or above the bud union, while the stocks are more resistant.

Citrus trees are handicapped when planted on land facing south or west, or where they are subject to more than slight frosts. They will not thrive in windy places.

Untried varieties should be planted only in experimental numbers.

Plant in blocks, according to variety. Mixed plantings result in spraying and harvesting difficulties.

—I. L. NOTTAGE,
Orchard Instructor, Auckland.

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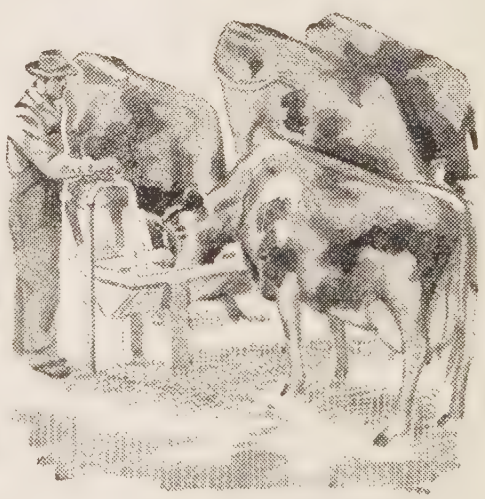

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Guide for the Home Garden

No Substitutes for Vegetables

"The complete substitution of a synthetic for a natural diet is quite beyond the immediate possibilities of science."
—"The Fruit Grower."

IN GREAT BRITAIN to-day carrots are termed the "good root," mainly because of their high vitamin A content. Some authorities ascribe the good health of the British people and the complete absence of epidemics which may have been expected to occur to the high consumption of carrots and other fresh vegetables. The principal value ascribed to the carrot is its carotene content, which is also found in all green leafy vegetables. It is this substance which gives the carrot its rich colour, and from which its vitamin A content is mainly derived.

Synthetic vitamin tablets have been experimented with in Great Britain, and a report recently published by the British Medical Journal states, "The vitamins had no statistically significant effect on the rate of growth, nutritional status, muscular strength, condition of teeth or gums, or absence from school on account of illness." So far as factory workers are concerned the results were similar. In view of the results just referred to it is interesting to recall a statement made on October 24, 1942, by Sir J. C. Drummond, Scientific Adviser to the British Ministry of Food: "It is the Ministry's policy to ensure that the people get enough of the requisite natural vitamins for efficiency in their daily food, and not that they should be encouraged to take them in pill form as a sort of medicine or diet supplement."

The experiences here recorded and the statement quoted by Sir J. C. Drummond should go far to convince home gardeners that there cannot possibly be any substitute for the vegetable products of their own garden.

In the June issue of the journal reference was made to preparatory work which might be carried out pending better weather conditions. Providing the necessary quantity of soil for seedling propagation has been sterilised, it should be recognised that great care is necessary in order to preserve it from re-contamination. Once this takes place the virulence of the infection is severe and subsequent danger to plants more intensified than before sterilisation was carried out. It is therefore necessary to see that all tools used for working among the soil are clean and particularly free from soil particles, loosely picked up in any part of the garden.

Work for July

Spring Cabbage: During July, when the soil is probably at or near its lowest temperature, it may be noticed with this variety of cabbage, from which the earliest spring cutting is rightly expected, that growth is very much slowed down and development towards hearting considerably impeded; also that the outside leaves are turning yellow. This condition must not be interpreted to mean that the stage of maturity has been reached. On the contrary, attention should at once be given to two factors—proper drainage and the lack of sufficient nitrogen. If the drainage is at fault, it will be advisable to see that the area where the plants are growing is relieved of any surplus water. Exceptionally wet conditions which obtain for prolonged periods will prove disastrous for early spring maturity of the plants, and will inevitably be responsible for the starting of root-rot. Provided drainage has been satisfactory nitrogen may be applied, preferably, at this season, as a pinch of nitrate of soda to each plant. It should be lightly worked into the soil under the outside

Don'ts

Don't forget the necessity for increased potato production during the coming season. This will necessitate careful attention to the seed at present being held for early planting. See that it is stored where frosts will not damage the shoots and where there is plenty of light and fresh air.

Don't overlook digging in a green manure crop early enough to allow it to be mainly decomposed before planting a crop on top of it.

Don't omit that "pinch" of nitrate of soda to the spring cabbages; it will be of material assistance during the cold periods.

Don't neglect weeding and caring for young onion seedlings; they will be required shortly for transplanting to supply onions for the household until the late spring of 1945. It seems a long time to look ahead, but this should be the objective.

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leaves and close to the root of the plant. If this is done, an improvement in growth may be noticed in a very short time.

Summer Cabbage: Towards the middle of July preparations should be made for sowing the seed of a cabbage variety to follow on with Flower of Spring, which may now be in the garden. For this purpose Golden Acre is specially recommended. If the seeds sown or the plants purchased are true to type, the product will be similar to Copenhagen Market, but smaller, with few outside leaves. It can be planted closer, 18-24 in. between the rows, and 14 in. between the plants in the row. Blood and bone manure 2 parts and superphosphate 1 part mixed together and applied at the rate of ¼ lb. per sq. yd., preferably a fortnight before planting, and worked into the soil will be suitable. Straight nitrogenous fertilisers are rarely required for this variety of cabbage. Plants may be grown in a small seedling box 4½ to 6 in. deep.

Carrots: In warm districts, or where a comparatively light soil obtains which will not "set" readily, carrot seed may be sown; but for success in very early sowings a well-drained bed is necessary. Where shallow top soil only is available in which to make a sowing, and where it is not practicable to form a raised bed, a short-rooted variety such as Early Horn or Early Short Horn will be suitable. No fresh stable or farmyard manure should be dug in immediately before seed sowing. A light dressing of superphosphate, 2 oz. per sq. yd., will generally be sufficient fertiliser to produce a good crop in a well-cultivated garden soil. This should be broadcast over the area to be sown and raked in.

Turnips: At the same time and under similar weather and soil conditions a sowing of early turnips may be made. The quick-maturing Early White Milan or Milan Purple Top will develop quickly into nice-sized roots if the seed is sown in a well-drained, sunny part of the garden. In rows 12 in. apart the seed should be sown sparsely. If this is done, thinning will not be necessary.

Beetroot: This is another of the turnip-rooted crops, the seed of which may be sown as soon as soil conditions permit. While the ordinary depth at which the seed may be sown is ½ in., half that depth will be sufficient for a very early crop. (This remark applies generally where seed is sown in rows for early cropping). Darkest Globe and Derwent Globe are varieties which, under usual garden soil conditions, will return good yields. If the land has not been limed for the previous crop an application of 2 oz. per sq. yd. of bed would be beneficial. Agricultural lime is to be preferred.

Broad Beans: Home gardeners who desire a crop of broad beans during late spring or early summer, and who have not yet planted the seed, would do well to have the operation attended to without delay. The crop thrives best under cool conditions and in a rather heavy, well-drained, fertile soil. In a trench 3 in. deep seed may be spaced 4 to 6 in. apart and planted to a depth of 2 in. If more than one row is planted the distance between them should not be less than 3 ft.

Late Green Crops: When examining late crops of the cabbage family—late savoy, kale, broccoli and Brussels sprouts—it is desirable to remove all spent leaves, as these, when permitted to fall and rot in the garden, may lay the foundation for the development of fungoid diseases to attack following crops. The usual practice is to put such leaves in the compost heap; but unless sufficient heat is developed in the compost to destroy the fungi, there is always the danger of spreading disease when the heap is broken up and applied to garden crops. The stems and roots of vegetables which have been used should also be removed from the garden. If it is desired to put these in the compost heap they should first be well bruised with the back of a spade. This will assist in the decomposition of the hard substance; if this is not done they may be dried and burned.

The diseased haulms of late potatoes and the leaves and stalks of celery which have been attacked by late blight should be scrupulously cleaned up and destroyed by burning.

Storage Hints

Periodical inspection is of equal importance for the preservation of crops which may be held in store for consumption. Kumeras—sweet potatoes—are particularly susceptible to the development of disease while being held in storage. This is one reason why, during harvesting, the crop requires to be carefully handled. Cold, humid conditions are highly favourable for the spread of disease among the tubers, which should be regularly examined and all affected specimens removed.

Potatoes, too, although not so readily affected as kumeras, should be regularly inspected and all diseased tubers removed so that further infection may be prevented.

Carrots, if carefully selected prior to storage, will, if properly stored, remain in good condition until spring. There is, however, one disease concerning which it is advisable to be watchful—watery soft rot, the effects of which are fairly rapid and disastrous to the stored crop.

The disease develops from a soil-borne fungus, *Sclerotinia sclerotiorum*, which also attacks cabbages, celery, lettuce, and tomatoes, as well as other garden vegetable crops. Roots severely attacked by this fungus are almost completely obscured with a white, downy covering, underneath which is to be found the soft, watery rot, and the whole carrot is seen to be totally unfit for human consumption. Needless to say, affected roots should be instantly removed and a careful examination made of all those in storage which may be affected.

High humidity during the growing period and excessively moist conditions during storage, it can be assumed, are the chief factors in the incidence of the disease. It would therefore appear that the best means of prevention lies in clean cultural practices and the complete eradication of weeds. If and when carrots may be dug for storage, no roots the foliage of which at the crown show indications of the disease should be stored. The roots may not seem to be affected, but the disease is there, and before long will certainly manifest itself.

—D. K. PRITCHARD, Instructor in Vegetable Culture, Wellington.

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Seasonal Work for Beekeepers

Section Honey Production

WHEN colonies are reduced to a single brood chamber at the beginning of the main honey flow, a section honey super should be added immediately and exceptionally strong colonies given two supers so that the total hive capacity will not be reduced below that existing before the upper brood chambers were removed.

The first supers added should contain several bait sections, which act as an inducement to the bees to enter the supers and commence work. Bait sections are not necessary in any of the subsequent supers. When the bees have drawn out the comb foundation in the outside sections of the first supers the second supers should be placed under the first ones (Fig. B), which under normal conditions should now weigh about half their completed weight. The third supers (Fig. C) are inserted under the second supers as soon as the foundation in the outside sections of the second supers is drawn out. Normally at this time the first supers will be nearly completed as far as the weight of honey is concerned.

This is the general plan used with additional supers. The satisfactory addition of supers during the flow presents a problem, as variation in the strength of colonies and the degree of intensity of the honey flow influences the application of supers. In poor seasons single supers may be sufficient, whilst in good seasons several supers per colony will be necessary. If the honey flow is such that the sections in the middle of the supers are nearly sealed over before the foundation in the outside rows of the sections is drawn out, the second supers should be added above. Whenever possible additional supers should be added to the hives slightly ahead of actual requirements, as this induces the bees to make greater efforts and also draws large numbers of bees from the brood nests into the supers, thus relieving the congestion there. The early part of the honey flow should be one of expansion of storage room, so that large areas of cells are available for the storing of nectar, which during a rapid honey flow is extremely thin and requires considerable room for storage and ripening.

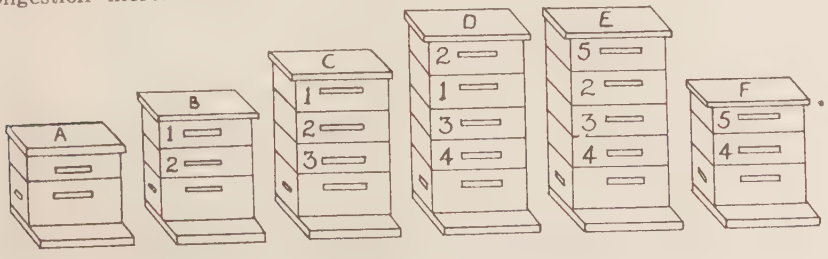
Contraction of Super Room

The latter half of the honey flow should, in contrast to the first half, be one of contracting super room and trying to get all sections finished sufficiently well to be marketable. (Note arrangement of Fig. E.) During good seasons colonies are well supered and beekeepers find it more convenient to follow the general rule of waiting until all the sections are sealed over except the outside rows, but theoretically, to secure sections of the very best appearance, each one should be removed as soon as it is entirely sealed.

In poor seasons when colony requirements can be supplied by using a single super per hive the middle row of sections should be removed as soon as capped, otherwise the bees will travel-stain them. The sections in the outside rows should be shifted to the middle of the supers and sections with full sheets of foundation placed in the empty spaces.

Much can be done towards the close of the honey flow to ensure each hive having ample room by the exchange of supers between hives in a manner that will reduce the room on hives having more than they need and reduce crowding in hives requiring room. If new supers have to be given at this period of the season, they should be placed on top of those already in the hives.

When it is clear that the season is nearly over the lightest supers should be shifted to the top and the heavier ones toward the bottom, thus arranging them for the most advantageous finishing (see Figs. E.F.). The supers should be reduced to one or two in each hive as soon as possible. Bees usually cap the honey more promptly toward the close of the honey flow, but at times they are very slow to do so, consequently hives may be considerably tiered up before any of the supers are ready to take off. It cannot be assumed that because sections are capped at the top the super is ready for removal. The bottoms must also be examined, as the bees occasionally fail to seal the lower portion of the sections.



Indication of Nectar Flow's End

The successful section honey producer must be able to detect early indications that the cessation of the honey flow is in sight. Beekeepers of long experience will begin the rearrangement of supers for their completion just before these signs are noticeable to the average apiarist. The progressive beekeeper must be alert and intimately acquainted with bee behaviour, and also possess a thorough knowledge of the main nectar-secreting plants in his locality. An understanding of bee behaviour and plant life will be of great assistance to him in foretelling when the flow has passed its peak, and, consequently, he can begin the rearrangement of supers for their completion. There is as great a variation in the closing of the honey flow as there is in the beginning. If it is dry and hot with a definite lack of moisture in the soil, the flow may cease abruptly without exhibiting any warning signs, whilst, on the other hand, the flow may be prolonged by frequent rains and high temperatures. When climatic conditions are such that the main flow ends suddenly the signs which indicate its close are often so abruptly apparent that the beekeeper is not able to change his manipulations rapidly enough to meet the emergency. When, however, the flow stops gradually the indications are of great help to the beekeeper.

A growing tendency for the bees to pack honey in the brood nests is one of the first signs that the nectar flow is nearing its end. Some colonies are much more inclined to do this than are others, being governed, perhaps, by the vigour or otherwise of the queens at this particular period. Another indication that the beekeeper has no time to lose if he is to avoid being caught with numbers of unfinished sections on his hands is a marked tendency for the bees to stick increasing quantities of propolis on the sections. Indications of a more advanced nature are found

in the actions of the bees, which become progressively more disagreeable to work with, and the presence of robber bees in the apiary.

In the section frames the outside sections may be partly or almost completely filled, but whatever their condition the bees will remove the honey from them when the honey flow fails to yield sufficient nectar for colony maintenance. Thus the time will have arrived for the immediate removal of all completed sections on the hives.

Removing the Honey Crop

Supers of sections completed during the honey flow should be removed at that time, as their removal is then a comparatively easy matter. Where the honey flow has been constant and heavy the easiest way of taking off such supers is to smoke the bees out of them. Smoke should be blown downward between the rows of sections to drive the bees below. It is important that the smoke be applied continuously but without violence to keep the bees running downwards. If the bees are allowed to stop and begin filling up with honey it is then almost impossible to drive them down, and they may even make perforations in the cappings. When the majority of bees have been smoked out the supers should be lifted from the hives and leaned against the shady side, where they are left for 20 minutes, during which interval the remaining bees will usually vacate the supers. At the close of the honey flow sections are best removed by the use of bee escapes. A description of the Hodgson ventilated escape board was included in the bee-keeping section of the January issue of this journal. The advantages claimed for the ventilated escape board in extracted honey production have not the same importance in the removal of section honey, and the plain board may be used with equal advantage.

The escape boards should be put under the section supers either in the morning or evening, according to the lateness of the season and weather conditions, but removal of the supers should always take place about 9 o'clock the following morning. If the work is carried out with a minimum of delay, no more than 20 minutes being spent in the apiary, the bee-keeper should be away with the crop before the bees realise what is occurring.

—*R. S. WALSH, Apiary Instructor, Auckland.*

Practical advice and sound information on how to get assured vegetable results are contained in "Vegetable Growing in the Home Garden," by D. K. Pritchard, which is available at 6d. a copy (post free) from offices of the Department of Agriculture.

ISSUED BY THE DEPT. OF HEALTH

SCARLET FEVER

THESE ARE THE SIGNS

Scarlet Fever is on the increase. Watch for it and isolate any suspected case at once. These are the signs:

Sore throat, headache, a feeling of nausea (possibly accompanied by vomiting), hot dry skin, raised temperature, flushed cheeks. If these signs occur ACT PROMPTLY. Put the patient to bed at once and keep all visitors away until the doctor has called. If it IS Scarlet Fever, a bright scarlet pin-point rash will appear after 24 hours on the neck, chest and trunk, spreading to the limbs. Parents and teachers thus have 24 HOURS WARNING.

Children from one to ten years are the chief victims, but adults may get Scarlet Fever. It is mainly spread from person to person by droplet infection in the first 24 hours. If the patient is allowed up too soon, complications may result in the ears, the glands, the kidneys and the heart. With affected ears and glands, a patient can STILL INFECT OTHERS.

In any house where there is Scarlet Fever, all children must stay away from school for 7 days, if the patient goes to hospital. If he is nursed at home, child contacts must remain away from school till the patient is released from isolation.

READ THESE INSTRUCTIONS AGAIN CAREFULLY

They show the only way to check an Epidemic

22

FOR A HEALTHIER NATION

Notes for the Poultry Farmer

The Breeding Season: Future Hopes

— By —
F. C. BOBBY,
Superintendent of Poultry Husbandry, Wellington.

ANOTHER breeding season has started and with it rise the hopes of both poultry farmers and the public alike. So much depends for the poultry farmer upon a successful breeding and rearing season. For the general public a successful season will mean greater hopes of increased egg supplies in the near future. Thus the present season is one of greater importance than usual, since increased food production is a matter of urgent necessity. Those in and associated with the poultry industry know that these are difficult times for poultry farmers and even with the greatest good will the endeavours of many will be curtailed or limited by factors beyond their control. There are temptations today which the poultry farmer will do well to resist. Increased production is urgently needed, but this increase should be achieved along sound lines if unpleasant and costly repercussions are to be avoided for the future.

When there is such an increased demand for hatching eggs, day-old chicks, pullets, and even cast-off hens the tendency is to put quantity at the expense of quality in the breeding pens. This is nothing new or peculiar to New Zealand. The poultry industry in Britain met a boom at the end of the first Great War, expanded rapidly, and placed quantity before quality. The result ultimately was disastrous. Breeds lost size and stamina with the result that disease and mortality increased to an alarming extent. This can and will happen here unless care and restraint are exercised now and in the next few years. This care should start with the breeding pens. The standard of the present season's breeders should not be lowered just to obtain quantity of output in hatching eggs and day-old chicks. There is perhaps an even greater damage—that of breeding indiscriminately from pullets. No one with an adequate knowledge of poultry breeding can argue that breeding from pullets cannot be done successfully, but—and it is a big but—success is invariably limited to the thoroughly experienced breeder, who knows that breeding from pullets can be only a small part of his breeding programme and must be confined to most carefully selected stock. Unfortunately, only too often today it is a common sight to see large flocks of pullets mated and large cabinet incubators awaiting the eggs produced. Let the poultry breeder and purchasing public alike be warned. This will lead to increased disease troubles in the future. It has happened in other poultry producing countries and it will happen here. The excuse of breeding from pullets without due care in order to get early hatched chicks is not sufficiently sound to warrant the breaking away from good breeding principles. If you must breed from pullets, ensure that their progeny are not used as pullets for breeding purposes in the following year; this is courting disaster.

There are two further methods by which increases in stock may be achieved: hatching early before the normal rearing season and extending the season beyond the period normally fixed for breeding birds. Early hatching has come into favour of recent years and as a means of increasing our stock today it has much to commend it. Generally the chicks so hatched rear well and develop good body size as the birds approach maturity. It is to be regretted, however, that late hatching, from mid-October until well into November, is also much on the increase. Those who travel from farm to farm during the rearing season know just how unsound this policy can be. Late-hatched pullets are so rarely profitable. More difficult to rear and late in maturing, these birds appear to be more susceptible to disease than any others. This fact should be remembered during the present season, since there are indications that late hatchings are contemplated. Such birds may prove a success, but the odds are heavily loaded against them from the start. The hope may be expressed that poultry farmers will experience a good season, that they will retain every sound breeding bird available, and produce to the limit of their capacity. To do this successfully wise management must prevail.

Limiting Factors

This would seem to be a suitable time for discussing frankly some of the difficulties facing poultry farmers—difficulties which may unfortunately prove to be limiting factors in increased production.

1. Cabinet Incubators: An appreciable number of commercial poultry farmers have placed orders for Australian-made cabinet incubators and have impatiently awaited their arrival. A clear explanation of the position may be of interest if not particularly helpful to those concerned. Recent information direct from Australia indicates that the manufacture of incubators there lags well behind present demands. Thus Australia has withheld export licences for incubators ordered by New Zealand. There have not been any restrictions during the past two years on the importation of incubators into this country. Some poultry keepers have erroneously believed that importations have been restricted and that this has caused the present shortage of machines. Action has been taken and is still being taken to get incubators released in Australia, but the latest reports indicate that only a very limited number are likely to reach New Zealand in time for this year's hatching season. In the meantime determined efforts are being made by two firms in this country to manufac-

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ture satisfactory incubators. While these firms cannot hope to meet this year's demands for machines their assistance in this direction will help and should be even more helpful by next year.

2. Building Materials: Poultry farmers expanding their plants or establishing new farms have received building materials, but often after long delays. Their determined efforts to continue building in spite of difficulties are to be commended. Corrugated iron is not available, but many have now successfully used corrugated asbestos sheets. Unfortunately, delays and difficulties will continue where building materials are concerned. Asbestos sheeting and timber are required for new human accommodation and supplies at any given time may thus be limited. These delays and shortages cannot be avoided at the present time.

Two-inch wire netting is available on application for release in all districts, but the ¾-in. mesh netting is in only limited supply; in fact present stocks are nearly exhausted. It is hoped that further supplies will come to hand, but any such supplies will be limited in quantity.

3. Maize Meal: Unhappily the New Zealand-grown maize crop was seriously damaged by bad weather. Exhaustive attempts were made to import maize from large maize-producing countries. These attempts were unsuccessful for a number of reasons, such as the shortage of shipping space and the fact that the countries approached had no surpluses for export purposes. Poultry keepers must therefore face the fact that maize or maize meal is likely to be unobtainable until well into or towards the end of the rearing season. This is unfortunate, but unavoidable. Among other things maize supplies chicks with vitamin A. Adequate quantities of young green food and cod liver oil must be supplied this season to ensure a satisfactory supply of this vitamin.

4. Cod Liver Oil: Good quality cod liver oil and "double strength" pilchardene oil are available, but at a comparatively high price, which is calculated to influence poultry farmers against the use of an oil rich in vitamin D. Should the winter and early spring bring bad weather trouble may be expected from rickets of varying degrees of severity where cod liver or pilchardene oil is left out of the chick mashes. Accordingly poultry farmers are urged to use an oil of known quality in spite of the price. Where "double strength" pilchardene oil (200 units of vitamin D) is purchased it is necessary to use only 1 per cent. (approximately 1¼ pints per 100 lb. of mash) of this oil, but care should be taken to ensure even distribution throughout the mash by thorough mixing.

5. Chick Sexing: Once again New Zealand is short of chick sexers for the hatching season. This will place a heavy strain upon those carrying out this work. Poultry farmers are requested to assist in helping these sexers by having chicks ready for sexing against the arrival of their chick sexer. Alterations in hatching times and consequent delays place extra strain on the sexers concerned, who work long hours and travel many miles. Assistance of this nature will do more to help efficiency in sexing than criticism and lack of co-operation. On the other hand chick sexers, even while it is acknowledged that they are working under heavy pressure, are reminded that any carelessness or unnecessary strain placed on themselves invariably means a loss of hard-earned money to the poultry farmer.

Co-operative effort by all in the industry today is one of the best means of overcoming wartime difficulties.

Containing valuable information for all interested in egg production Bulletin 198, "The Theory and Practice of Poultry Feeding," is available at 6d. per copy (post free) from offices of the Department of Agriculture.

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Federation of Young Farmers' Clubs

District Committee's Annual Report

THE following report, presented by the chairman (Mr. W. P. Nichol) at the annual meeting of the Western Bay of Plenty District Committee, gives an indication of the work being carried on in that district:—

It gives me great pleasure to present the annual report of the Western Bay of Plenty Y.F.C. District Committee for the year ended March 31, 1944.

The past year has been a most successful one. Four well-attended meetings were held; in May and August at Tauranga, in November at Paengaroa, and in February at Te Puna. Five members attended the annual conference held in Palmerston North, and at this conference five members of this district committee were elected to the Memorial Sub-committee. The district was well represented at all Auckland Council meetings during the year, one of which was held in Tauranga.

During the winter the usual debating competitions were held, Te Puna defeating Paengaroa A in the final, with Te Puna winning the Auckland Council Eastern Area Cup, and the Bay of Plenty Shield from Waimana by default. Congratulations are extended to the members of the Te Puna team.

A stock-judging field day was held at Mr. M. A. Wilkin's property at Paengaroa. Four classes were judged for which Mr. D. S. Ross presented medals. The following were the winners in their respective classes:—Dairy cattle, senior, I. B. Vant; dairy cattle, junior, I. Rowlandson; sheep, I. Spratt; pigs, K. Conway. The official judges were: Dairy cattle, Mr. S. F. D. Watson; sheep, Mr. S. P. Spratt; pigs, Mr. J. A. V. Gulliver. Our thanks are extended to these gentlemen for their assistance in this respect. It is worthy of note that this is the first occasion that an active club member has acted in this capacity, and our warmest congratulations go out to Mr. J. A. V. Gulliver. The Wright, Stephenson Stock-judging Cup was won from the Eastern Bay by default.

A patriotic ball was held in Tauranga early in August, and the net profit of £40 7s 7d was donated for patriotic purposes.

The district committee arranged for two radio sessions from 1YA, members from Te Puke and Te Puna Clubs providing the material.

An ensilage competition for the Doidge Cup was keenly contested. Mr. C. R. Taylor, Department of Agriculture, Rotorua, acted as judge, and B. Gordon, Pukehina Club, was the winner.

A seven-a-side football tournament held in Tauranga was won by Paengaroa. In all five teams were entered; Mr. G. Spratt acted as referee.

Meetings were arranged in Gate Pa and Paengaroa to give members an opportunity of meeting the Dominion vice-president, Mr. S. G. Avery, and of viewing an exhibition of talkies presented by the Dominion organising secretary, Mr. S. Freeman.

The Dominion president, Mr. T. E. Streeter, attended the annual meetings of the Tauranga and Paengaroa Clubs. An invitation was extended to members of other clubs to attend these meetings.

Thanks are extended to Messrs. K. I'Anson and J. C. Wright for their joint effort in reviving the Omokoroa and Tauranga D.H.S. Clubs. There are now a total of eight active clubs in the district, namely, Te Puke, Tauranga, Te Puna, Paengaroa, Tauranga D.H.S., Omokoroa, Pukehina, and Kati Kati.

Our financial position is very sound. This, I feel, gives strength to our committee. Our thanks are due to the clubs and many others who have made so many generous donations.

I would especially like to thank Mr. M. W. Watt for the part he has played as one of our trustees.

A report such as this would be incomplete without making reference to the many members on active service. Our heartfelt sympathy goes out to the relatives of those who have been killed on active service, or who are prisoners or missing. Killed in action: Lieutenant R. F. Walford, Corporal A. W. Riddell, Sergeant B. K. Werohia, Privates J. Blythe, F. Bullock. Killed while prisoner: J. H. Nichol. Drowned while prisoner: V. Woisin. Missing: Sergeant T. Vercoe. Prisoner of war: T. Galpin.

In conclusion I would like to thank Mr. G. Spratt for all that he has done in his capacity as hon. secretary of the committee, and although we all look forward to the day when we will once again have a Departmental officer to assist us, we cannot but be thankful that we have an active member so capable to carry on the good work as Mr. Spratt has done. Further, I wish to thank you, one and all, for the loyal support that you have given me during the past year, and I hope and trust that you will give the same support to the incoming committee.

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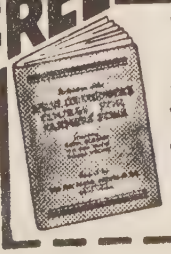

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Wairarapa Field Day

A VERY successful field day was staged by the Wairarapa District Committee recently at the Solway Showgrounds, Masterton. There were about 80 competitors, who showed a keen interest in the proceedings. A pleasing feature was the presence of members of the Women's Land Army. A number of farmers and others interested were present.

In the morning the judging of Jersey heifers took place. Mr. C. Larsen, of South Road, Masterton, supplied the heifers, and Mr. W. H. Hall, the Carterton Jersey breeder, carried out the duties of judge and demonstrator. Four pens of three crossbred ewes for fat lamb production were supplied by the Wairarapa Training Farm, and Mr. W. F. McLaren was judge and demonstrator. Mr. G. Laing provided and demonstrated with Southdown rams and fat lamb types.

Mr. E. T. Bliss conducted the guessing competitions.

After lunch dog trials were held, for which Mr. G. Hay was judge. Considerable interest was taken in the trials and a high standard was set.

The field day was well organised and reflected credit on those concerned. Among those present were Messrs. N. Blatchford, district president of the Young Farmers' Clubs, N. Lamont, district secretary, and H. N. Bibby, agricultural instructor at the Wairarapa College.

In the evening the Masterton Young Farmers' Club held a dance in the Masonic Hall; the hall was crowded to capacity and all present spent an enjoyable time. The music was supplied by Miss M. Herrick's orchestra, and extras were played by Miss B. Hawke and Mr. J. West. Messrs. D. McLachlan and D. Buick were the M.C.s. A lucky spot dance was won by Miss D. Lawrence and Mr. P. Easthope, and a Monte Carlo waltz by Miss E. Corlett and Mr. R. Thorne. Supper was served by a ladies' committee.

Jersey cattle being judged by Land Girls and young farmers.
[*N. Lamont, photo.*

The results of the stock judging and other competitions were as follows:—

Jersey Cattle.—Land Service, Miss H. McKinnon, 1; Miss B. Parry, 2; Miss P. Street, 3.

Senior Y.F.C.: E. Sanson, 1; J. Rose, 2; V. Gates, 3.

Junior Y.F.C.: D. Wilmshurst, 1; M. Renall, 2; N. Groves, 3.

Ewes.—Most suitable for fat lamb raising—Land Service: Miss B. Parry, 1; Miss Noble, 2; no award for third.

Senior Y.F.C.: A. Southey, 1; B. McKenzie, 2; W. Evans, 3.

Junior Y.F.C.: M. Morrison, 1; H. McMaster, 2; G. McDonald, 3.

Dog Trials.—Young Farmers' Clubs: A. James, 1; G. Cave, 2; C. Evans, 3; W. Heckler, 4.

Weight Guessing (correct weight 74lb.).—Miss McMaster, 1; N. Blatchford, 2.

Distance Guessing (19yds. 2ft. 6in.).—G. McDonald, 1; Mrs. J. McAnulty, 2.

Y.F.C. Activities in Egypt

SOME interesting information relating to the activities of one of the Young Farmers' Clubs operating in Egypt has been obtained from a notebook recently forwarded by Bdr. N. C. Mahon, of Rangiora. The following are details of some of the lectures given in the first course:—

Sergeant-Major Boyd-Clark, who was formerly a Bradford wool buyer in New Zealand, spoke on the many points connected with the selling of wool; Sergeant-Major K. Scott (drover, musterer, with dog-trial experience), breaking-in dogs, picking pups, etc.; Gunner F. Beachman (surveyor, Government Department), land development and valuation; Sergeant-Major Scheners (a farmer who breeds cattle for fattening), beef Shorthorns and Black Polls; S.-Sgt. J. Antworth (bacon buyer) spoke for three hours on the breeding, feeding, and diseases of pigs; Cpl. John Sutherland, M.Ag.Sc., spoke on two afternoons on animal genetics and breeding; Pte. Watt (musterer) gave a talk on the breaking-in of hacks. Other talks included small seeds, wheat, and farm accountancy.

Over 100 members attended this first course, which was divided into three classes: (a) Sheep and wool; (b) dairy-farming; and (c) mixed farming. All three classes included farm management and accountancy.

Various tours undertaken included visits to the Museum of Agriculture, situated on Gezira Island, and the Tefteesh of Inshas (King's Farm). In describing the museum, Bdr. Mahon states that it was built at a cost of £15,000, and apparently "nothing was left out." Live fish swimming in glass pools; animal studies in waxwork; electric models of flour-mills, and many other interesting works were to be seen in motion by pushing a button. Diseases in human beings were shown in detail, wax models being used, and advice as to treatment for each disease was given in the same exhibit. Bdr. Mahon states that "the gardens round the museum are really lovely—green lawns, with flowers, and children playing on the lawn; these scenes remind one of home." The visit to the King's Farm was of particular interest, as can be seen from the following copy of the

official programme, which was specially printed for the occasion:—

(1) Arrival at the Rest House, adjoining the Administrative Buildings, where refreshments will be served.

(2) Visit to the Cactus Collection (800 different types).

(3) The Poultry Research Farm (3000 birds).

(4) Passage through the Terraced Orchards. Leaving the cars to see the Sugary Orange Plantation.

(5) The Riding Camels.

(6) The Arab Horses.

(7) The Gazelles Grotto.

(8) Continuation of the visit to the Terraced Orchards.

(9) Visit to an Irrigation Station —two engines of 94 h.p. each.

(10) Return to the Administrative Offices, and visit to the land which has been reclaimed by means of drainage and embankment.

(11) Luncheon Banquet on the Palace Lawn.

(12) Visit to the Domain Museum.

The highly educative nature of the activities undertaken by this club can be gauged from the above. The lads should be able to find plenty to talk about when they return home to their Young Farmers' Clubs in New Zealand. We are indebted to Bdr. Mahon for his most interesting information. His address is 24630, Bdr. N. C. Mahon, 33 Battery, 7th N.Z. Anti-Tank Regiment, 2nd N.Z.E.F.

Easter Youth Conference

A JOINT conference of youth organisations was held in Wellington during the past Easter. The railway restrictions rendered it difficult for many delegates to be present; nevertheless, there was a good attendance at the conference, which was opened on Saturday, April 8, by Major Skinner, Minister of Rehabilitation. The conference was continued on the Easter Sunday and Monday, April 9 and 10. The New Zealand Federation of Young Farmers' Clubs was represented by the organising secretary, who addressed the conference on the aims, objects, and activities of the Y.F.C. Movement.

The following resolution was carried:

—"That this conference recognises that the youth of the country and the youth of the town had problems in common, and that these problems can only be solved by close co-operation between them. To encourage this we consider that the Young People's Clubs and other kindred organisations in the towns and the Young Farmers' Clubs in the country should initiate reciprocal visits between the youth of town and country."

Reports on Club Activities

WESTERN SOUTHLAND.

Dipton.—Annual meeting. Officers elected: Advisory president, Mr. F. McRae; chairman, W. King; secretary, R. Hayward; treasurer, R. English. Arrangements were made for a field day at the Dipton Lime Works. Attendance of 11 members out of a total of 16.

Orepuki.—Annual meeting. Officers elected: Advisory president, Mr. H. J. Townshend; chairman, F. Mason; secretary, W. D. Cook; treasurer, M. Young. Twenty-four members present out of 35.

EASTERN SOUTHLAND.

Five Rivers.—Annual meeting. Officers elected. Chairman, R. W. Muir; secretary-treasurer, T. Malone. A discussion took place concerning the club's activities for the coming year. Three new members enrolled. Total membership 17.

SOUTH OTAGO.

Warepa.—Interesting demonstration on colts at the Warepa railway yards by Mr. Hayhurst, veterinarian. Following the demonstration members visited the site of the Y.F.C. memorial tree-planting and set to work clearing the ground and cutting and burning gorse. Seventeen members present out of 21.

DUNEDIN.

Mosgiel District High School.—Annual meeting. Officers elected: Advisory president, Mr. W. T. O. Kaye; advisory member, Mr. J. H. Cumberbeach; chairman, T. Hammer; secretary, C. Munro; treasurer, N. Barkman; vice-chairman, E. Herbert. An address on "The Duties of Office-bearers" was given by Mr. Cumberbeach. There was an attendance of 19 members out of 23.

West Taieri.—Joint meeting with the W.D.F.U. to hear a talk, illustrated with lantern slides, given by Mrs. Cocks-Johnson on "Vegetable Growing."

NORTH OTAGO.

Enfield.—Annual meeting. Officers elected: Advisory president, Mr. F. Mulligan; chairman, J. Buick; secretary-treasurer, R. W. Buzan; hon. auditor, Mr. R. L. Smith.

MID-CANTERBURY.

Methven.—One new member enrolled. Reports by A. McKay (chairman) on the last meeting of the A. and P. Association, and on the recent meeting of the District Committee. R. Wightman gave a report on the meeting of the Canterbury Council. Arrangements for a stock-judging field day to be held on Mr. Marr's property, Border Leicester sheep to be judged in the morning and Romney sheep in the afternoon. The secretary was instructed to approach Mr. J. McPherson, Department of Agriculture, asking him to give a talk on the certification of seeds. Members gave short talks on a variety of interesting subjects. There was an attendnace of 20 members.

CHRISTCHURCH.

Christ's College.—Annual meeting. Officers elected: Advisory president, Mr. T. W. C. Tothill; chairman, J. M. S. Douglas; secretary, P. D. Fox; treasurer, F. G. Ulrich. Attendance of 70 members out of a total of 95. At a previous meeting Mr. Tothill gave an address on the constitution and objects of the Y.F.C. At the last meeting some interesting sound films dealing mainly with farming and farm implements were exhibited by Mr. Froude.

Darfield.—Annual meeting. Officers elected: Chairman, J. Duncan; vice-chairman, R. Reed; secretary, A. L. Mulholland; assistant secretary, S. Beatty. Eleven members attended out of 25.

Ellesmere.—Two new members enrolled. Arrangements made for the club's annual dance. Address by Mr. J. W. Calder, of Lincoln College, on "Changes in Wheat-growing." Twenty-four members present out of 47. The following officers were elected at the annual meeting:—Advisory president, Mr. G. W. R. Osborne; chairman, L. Tod; secretary, N. D. Lambie; assistant secretary, I. Hamilton.

St. Andrew's College.—Annual meeting. Officers elected: Advisory president, Mr. G. S. McKenzie; chairman, D. W. Mulholland; vice-chairman, A. W. Johns; secretary, D. Gray Campbell; treasurer, E. L. Stevenson. The meeting was addressed by Mr. McPherson, curator of the Botanic Gardens, Christchurch, who gave an interesting and instructive talk entitled "Bits and Pieces." There was an attendance of 53 at the meeting. The club has a full programme arranged for the season, which includes debates with adjacent clubs, impromptu speaking competitions, and visits to woollen mills, freezing works, and linen flax factory.

WAIRARAPA.

Carterton.—Discussion regarding the forthcoming field day; programme finally arranged. Address by Mr. Martin on "Pastures of the South Island and Their Maintenance." Two debates to be held at the next meeting, the subjects to be as follows:—"That Land Girls Should be Admitted to the Young Farmers' Clubs" and "That Stripping is Superior to Non-stripping." Attendance of 16.

Masterton.—Arrangements for field day at Solway Showgrounds, the programme to include stock judging, dog trials, chain stepping, and weight guessing. Mr. J. H. Sutherland, Department of Agriculture, gave an address on "Agriculture Generally in Egypt." Mr. Sutherland also gave first-hand information regarding the Y.F.C. in Egypt, and dealt with some of the duties and adventures of the "Long Range Desert Group." Thirty-nine members present.

MANAWATU.

Feilding.—Annual meeting. Officers elected: Advisory president, Mr. A. C. Buist; chairman, E. Beazer; secretary-treasurer, G. Milligan.

Rongotea.—Annual meeting. Officers elected: Advisory president, Mr. H. J. Lancaster; chairman, W. M. Hunt; secretary, F. B. Wood. Mr. E. Madden, of the Grasslands Division, gave a very interesting talk on "The Sowing-down, Returfing, and General Management of Aerodromes throughout New Zealand." Eighteen members present out of 28.

WANGANUI.

Bulls.—Arrangements for annual dance. Speaker for next meeting to be Mr. J. Hill-Motion, veterinarian; members of the newly-formed Y.F.C. at Ohakea R.N.Z.A.F. Station to be invited to the meeting.

Mangaweka. — Annual meeting. Officers elected: Advisory president, Mr. G. Bramley; chairman, L. McKinnon; secretary-treasurer, J. Robinson. Mr. Newport, Department of Agriculture, gave a lecture on "The Diseases and Ailments of Sheep." Two field days have been held recently, on Mr. Walter Shaw's property, where a demonstration was given on "The Care and Training of a Young Sheep Dog," and at Mr. Gorringe's stockyards, where Mr. Goodwin demonstrated on gelding and handling of young horses. At this latter field day there was an attendance of 20 members and 20 farmers and friends.

SOUTHERN HAWKE'S BAY.

Dannevirke.—One new member enrolled. It was decided that delegates to the Farmers' Union should give a short talk at each Farmers' Union meeting. Mr. H. M. Poole, chairman of the Southern Hawke's Bay District Committee, gave a comprehensive report of the last meeting of that body. The secretary read the minutes of the club's committee just held, setting out conditions, etc., of talks in the competition for a prize donated by Messrs. Chrisp and Russell, advisory members: Talks to be by High School members, and limited to three minutes, on farming topics, the final to take place at the November meeting. It was decided that the club become a member

of the New Zealand Humic Compost Club. A two-minute talk was given by G. Crosse, entitled "A Visit to Smedley." The speaker for the evening was Mr. L. Feierabend, who took as his subject "General Farming Topics"; his talk included some very helpful advice. There was an attendance of 20 at the meeting.

TE KUITI.

Paewhenua.—Final arrangements for annual dance. Lengthy discussion on the proposed field day, at which dog trials will be held. Mr. T. K. Harnett gave the first of his talks on the subject of "A Trip to America." There were 18 members present out of a total of 21.

BAY OF PLENTY.

Kati Kati.—Annual meeting. This club has just been revived after having been in recess for a period. Officers elected: Advisory president, Mr. H. Capamagian; chairman, D. M. Clague; secretary, D. J. Earl; treasurer, A. W. Earl. Attendance of 17 members.

Paengaroa.—The eighth annual report of this club has been received; space, unfortunately, does not permit of publication. The report is well written, and gives a comprehensive record of a very active and successful year. The report was presented at the annual meeting by the past year's chairman, C. Riddell.

Tauranga.—General business, a number of topics being discussed. Four new members enrolled. The winners of the cattle judging held at the recent field day were announced: Senior, I. Rowlandson and J. Wright (96 points), equal, 1; R. Evans, 2; A. Talbot, 3. Junior, G. Rowlandson (High School), 1; B. McKenzie (Tauranga Y.F.C.), 2; R. Alley (High School), 3. The Y.F.C. football team was finally selected. Arrangements for a gift evening on behalf of a member who is being married. Thirty-two members present out of 43. Officers elected at the annual meeting: Advisory president, Mr. G. Hinds; chairman, J. Wright; secretary, I. Rowlandson; treasurer, A. Talbot. The Dominion president of the Y.F.C. Federation was present at this meeting, and gave a talk on the Y.F.C. Movement. Attendance of 26 members.

Whakatane District High School.—Debate, the subject being "Draught-horse v. Tractor at the Present Time." At the conclusion of the debate the advisory president, Mr. Hubbard, gave an address on "The Qualities of a Good Speaker." Forty-three members present out of a total of 52. At the previous meeting a talk on "Poultrykeeping" was given by Mr. Dunning. Forty members attended. The club is holding weekly meetings. Mr. Hubbard has suggested that the club should have an apiary, and has offered to supply a nucleus from which to start. Impromptu speeches have been given by members at various meetings, and interesting discussions have taken place. It has been resolved that visits, trips, etc., organised by the club, shall be attended only by members and not by other pupils of the school.

AUCKLAND.

Clevedon.—Annual meeting. Three new members enrolled. Discussion on a proposal that the club should inaugurate a scheme for the rearing of heifer calves for returned servicemen settling on the land. There was an attendance of 13 members.

WARKWORTH.

Kaukapakapa.—Seven new members enrolled. It was decided that at each meeting two club members should give short talks before the main lecture or other feature for the evening; also that the club reporter write an article for the local newspaper dealing with the Y.F.C. Federation. An instructive talk was given by Mr. S. A. Browne on "Bee-keeping"; he was ably supported by H. H. Hooper, a club member, who demonstrated the method of hive work. Attendance of 26 members out of total of 48. Officers elected at the annual meeting: Advisory president, Mr. N. Barr; chairman, F. Swinburne; secretary, R. E. V. Seaman; treasurer, R. Milner; steward, G. McLean; reporter, F. Swinburne; hon. auditor, Mr. B. Jones; patrons, Messrs. W. C. H. Stevens, H. A. Hooper, and J. W. Hildreth.

Y.F.C. FEDERATION

Annual General Meeting

THE annual general meeting of the Y.F.C. Federation will be held this year at Timaru on Friday, July 21. A meeting of the Dominion executive will take place the evening before and it is understood that a suitable programme of interesting visits and other forms of entertainment will be arranged by the South Canterbury district committee on Thursday afternoon on the arrival of the visiting delegates and on Saturday prior to their departure.

The annual general meeting is open to all members of the federation, who are invited to attend and take part in discussions. Voting power, however, is restricted to members of the four councils.

"Practical Points in Sheep Dipping, Including the Design and Construction of Sheep Dipping Baths" (Bulletin No. 181) is available **free** at offices of the Department of Agriculture.

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Health Notes for the Farm

Radium and Cancer

Contributed by the Department of Health

MUCH has been heard about the use of radium in the treatment of cancer, and some people are inclined to regard radium as a miracle-worker, as a sure-cure. Let it be made clear at the outset that it isn't.

It is possible to say, however, that the use of radium has had extremely valuable results in the treatment of malignant growths. In many cases tumours subjected to the radium treatment have gradually shrunk and disappeared under the influence of the rays of radium, and without mutilating operations. However, this is not the case with all tumours, and radium should not be regarded as a panacea which will cure cancer in all its stages.

Radium, besides being a very rare metal, has the peculiar property of emitting invisible but intensely active rays from itself. If these rays are made to play on certain forms of tumour, and in certain ways we needn't go into here, they cause the tumour to disappear.

The treatment may be carried out in two ways. If the cancer is on the surface of the body, the radium, placed in a suitable container, may be strapped on to the affected part. If, on the other hand, the tumour is below the surface of the skin, probably the attack will be made by means of hollow needles containing the radium. These needles have to be inserted in the tissues through small holes made in the skin, and they have to remain in position for a time, varying from a few days to a week or more. The introduction of these needles usually means the use of an anaesthetic and rest in bed under supervision for that time.

There's no pain or unpleasant sensation of burning during the needle treatment, the only discomfort being that caused by the needles in the flesh. And that's only slight. After a few weeks, if the treatment is successful, one expects the shrinking of the tumour to be well advanced. The great advantage of this radium needle treatment, of course, is that cutting operations may be avoided.

A good deal of success has been obtained in the case of cancer of the surface of the body, such as cancers of the skin, of the lip, and of the tongue. And much success has followed treatment of cancers of the womb. Cancer of the breast in many instances may also be treated with radium, especially if the treatment is started early, before the disease has spread to the internal organs.

Attempts are being made also to treat internal tumours, and doctors all over the world are constantly searching for something that will bring relief from the scourge of cancer. Something has already been done, but much more remains to be done before we can say we've found a cure for cancer. In the meantime the search goes on.

While doctors are exerting themselves to try to help their patients the question arises as to how the patients can help their doctors. They can help their doctors very materially, and it's very much to their advantage that they should do so. The time factor is most important in the treatment of cancer, whether the treatment calls for the use of radium or for an operation.

The reason is that cancer, in the beginning, is a local disease, generally painless, and often so small that it's frequently regarded as not worth troubling about. If it's allowed to grow it tends to spread to the internal organs, and then it may be too late to do anything about it. If cancer is to be cured it must be taken in the early stages, when it is curable.

Don't ignore that lump or discharge that you can't account for—don't dismiss it as of no importance. Ask your doctor what it means, and he'll help you. If you leave it, put it off, he may not be able to help you later on.

Remember that cancer is no longer a hopeless, incurable disease. In many instances it is cured, and if it is treated early the chances of a cure are immeasurably more favourable.

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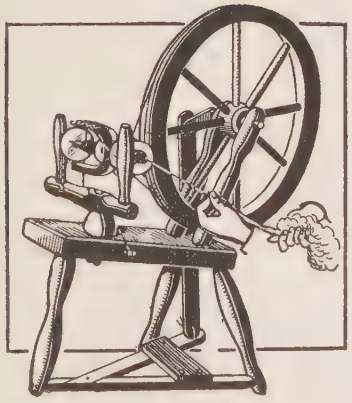

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Women's Land Service

To All Members of the Women's Land Service,

GREETINGS! *It will be the privilege of the W.W.S.A. to edit this section to be devoted to the Women's Land Service, and Land Girls are asked to forward contributions not later than the 10th of each month to P.O. Box 123, Wellington.*

It is not intended that space be devoted to other than items of interest to all women on the land. Original contributions from Land Service members will be appreciated. It is your page, members, so write and "carry on."

M. MALEMPRE,
Dominion Secretary, W.W.S.A.

Land Service Clubs

LAND Service Clubs are established in the following towns:—

Hamilton—Secretary, Miss Betty Goodman, c/o. A. Sole, Tuhikaramea R.D.

Wanganui—Secretary, Miss Mavis Gilbertson, c/o. Mr. Roland Young, 325 Somme Parade, Wanganui.

Palmerston North—Secretary, Miss E. E. Hanson, Sanson R.D.

Dargaville—Secretary, Miss M. Smith, Box 78, Dargaville.

Hastings—Secretary, c/o. W.W.S.A.

Tauranga—Secretary, c/o. W.W.S.A.

Likes the Life

From time to time letters are received from Land Girls telling how much they like their work and how pleased they are that they joined this Service. Here is one from Land Girl Mavis Gilbertson, writing from 325 Somme Parade, Wanganui:—

"IT WAS with mixed feelings that I left my position in a newspaper office to take up my new life on the land. Would I really like it as much as I thought I would? Would I be able to stand up to the work? Would I make a success of it? Now, after almost two years of outdoor life, I can answer as follows:—

"I do like it every bit as much as I had expected to. All my life I have been fond of animals and wished to be able to be amongst them. I had never even owned a dog—nothing more than a cat. I often have city friends say to me (I am working on a dairy farm), 'Cows! I can't bear the sight of them.' I personally can't see anything really disagreeable about a cow. I think they are rather docile, friendly creatures (particularly when one appears to shake hands with me when I am legroping her). Another remark which is often passed by some of my old friends is, 'How awful it must be having to get up so early!' I wonder how many of them realise what a wonderful sight they are missing at sunrise (I didn't have much idea once). It was a little hard, too, for a while getting up early, but one soon becomes accustomed to this. I would much sooner be working in the shed on a frosty morning than sitting shivering in a cold office. At least one can move round and keep warm.

"At the end of the day I always have the satisfaction of having accomplished something—perhaps neat rows of young vegetables, the hay finished for the season, or the sight of the herd enjoying the supper carted out to them. Although naturally I get rather tired, it is a healthy tiredness which makes me drop off to sleep almost as soon as my head touches the pillow.

"It is lovely to be outside and feel the first of the spring sunshine, to appreciate the cool autumn breezes after the summer heat, and to feel the invigorating winter winds blowing in your face.

"I am very happy in my work and like it more every day."

Membership

THERE are approximately 2,400 accepted members of the Women's Land Service in New Zealand to-day.

Members who live in isolated districts requiring pen-friends are invited to send their names to the Dominion Secretary. Do not be afraid to write; personal contact with members of the Women's Land Service will pass away a lot of lonely hours during the winter months.

CORRESPONDENCE SCHOOL

COURSES FOR LAND GIRLS

LAND GIRLS are to have the same privileges as members of the Armed Forces with respect to courses taken through the Correspondence School of the Education Department. A deposit of 10/- is required before text books are issued to pupils, but this amount is refunded when the books are returned at the end of the course.

The Correspondence School Branch has full examination courses on academic subjects, and practical courses in needlework and allied subjects, drawing, arts and crafts, also a full course in agriculture and farming. There are short or long courses.

HERE'S CHEERS!

Here's cheers for an Army both steadfast and strong!
The Women's Land Service works silently on,
On to victory well-nigh at hand.
Here's cheers to the girls who fight here in our land!

Here's cheers for the Home Front, the soldiers afar,
The sailors and airmen and their guiding star,
And the ones left behind in secure rural beauty.
Here's cheers for these dauntless, carrying on with their duty!

Here's cheers for the hundreds who have answered the call,
The frank and the fearless, the short and the tall!
All the summer, the winter, the spring, and the fall
Here's cheers to the Land Service Girls, one and all.

—PATRICIA M. JOWSEY.

THE GOOD NEIGHBOUR.

Little Things

LIFE for most of us is made up of little things—little joys and sorrows, little triumphs and disappointments. So many folk grow tired of the everyday happenings and long for some great romance or adventure to offset the quiet routine of small tasks. We seldom think of the vast opportunities for service afforded us by the lesser things—making a cup of tea for a tired neighbour; minding the children across the way; a gift of flowers; the loan of a book; baking a cake for someone's birthday. These are but trifles in themselves, yet what a difference they make to the happiness of those about us. I remember watching an old candy seller setting up his stall in an Eastern market place. He stocked only one kind of sweet, a soft, sticky substance rather like white nougat in appearance. Instead of cutting it into lumps to sell he took each piece between a pair of prongs and with a twist here and a pull there, and a dab of colouring for features, he fashioned the quaintest of dolls and birds and animals for his delighted young customers. The price of these artistic confections was a minute copper coin, worth about one-fifth of a penny, but the pleasure they gave was immeasurable.

Whenever you are tempted to skimp some seemingly unimportant part of your work remember that it is only faithful attention to detail which results in finished perfection, whether you are creating a poem, a symphony, an aeroplane engine or a home. One of the greatest achievements of recent years is the Burma Road, winding its perilous way through fever-haunted valleys and over high mountains. It could never have reached completion without the patient, unremitting labour of thousands of Chinese, women as well as men. Though lacking even such humble equipment as spades and wheelbarrows they still managed to remove enormous quantities of soil by scooping it up with their bare hands and carrying it away in baskets.

There is an unlimited power for good in a kind word, a friendly handclasp, unexpected praise or encouragement. Nevertheless we often overlook the pleasant happenings and let the petty annoyances dominate our thoughts, losing our sense of proportion thereby. One writer comments, "The last thing to do with our little troubles is to grouse and fume and complain about them; it isn't sensible." Most people act nobly in a crisis, but it takes a very special kind of courage to endure the small pinpricks bravely and present a cheerful front to the world. Next time we are feeling inclined to be overwhelmed by our grievances what about recalling to mind all the little "happinesses" which have graced the day:

"A morning dazzled by the sun . . .
The chores all done . . .
A visitor, young, eager, gay,
To lunch who did not overstay.
A kindling at her youthful fire
Of art neglected, prone to tire,
And faith reborn, that by the young,
The world will hear a new song sung.
More work, but half an hour quite free
To read, and drink my rationed tea.

ENOUGH INDEED TO MAKE A DAY STAND OUT. . ."

Mary

I Thought.

I thought, if long miles marched between
The towns where you and I
Performed our tasks and kept our dreams,
Perhaps as days went by
I would forget the little things
That made you dear, too dear,
And I should find serenity
Again if you weren't near.
But I have come to love you more;
Of that I'm very sure,
They are so wrong who'd have me think
That absence works a cure.

Country Life

IT IS now the beginning of my third year as sole teacher of a school more than thirty miles from the nearest town. I had never lived in the country until I came here and I must admit that at first I was very nervous of farm animals and expected to find the life very lonely. My answers to the many enquiries from friends in town schools and offices reveal the change in my outlook since I "took the plunge" and began my war effort many miles from my home and friends. To such questions as: "Aren't you terribly lonely out there?" and "What do you do with yourself in your spare time?" I reply: "I don't feel at all lonely. I love the country and there is just as much or more to do than in town."

There is time to think and space to observe the eternal beauty of Nature, and all this is possible without ignoring how the "other half" lives. To say that country folk are dull is, of course, untrue, and people in remote districts are usually as keenly interested in all types of education and advancement as any group of people in the heart of a city. In this district, for instance, we have a well-managed branch of the W.D.F.U. and an enthusiastic study group working upon psychological studies under the Adult Education Scheme.

During the last two years I have derived much pleasure and no little comfort from the thoughts conveyed by so many of your Good Neighbour letters and the various contributions from readers. May I thank you for the interest and inspiration your articles have given me and also extend my best wishes for the continuance of your Good Neighbour policy.—**Pet.**

He who can take no interest in what is small will take false interest in what is great.—**John Ruskin.**

"... any scraps today, lady"

Sorry, pal, but times are hard and you are not the only one who occasionally has to do without. But one day the good things of life will return in plenty, and among them will be Onehunga woollen products. Until that time comes, treasure your Onehunga or Air-Cell Blankets if you are lucky enough to own them. If you're not so fortunate, let us whisper that limited supplies are occasionally released for civilian needs and that Onehunga or Air-Cell Blankets possess quality that's well worth waiting for.

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KITCHEN GADGETS

NECESSITY is certainly the mother of invention, judging by the ingenious aids which "Good Neighbours" have devised to enable domestic tasks to be performed with greater ease and efficiency. I am sure many of our readers will benefit by the ideas this competition has called forth. "Helen," Winchester, wins first place, and the second prize is shared by "E.G.G.," Manurewa, and "Mary Marie," Halcombe.

Here is Ann Morriss, of Metro-Goldwyn-Mayer films, busy in her kitchen. The handy extension table and workmanlike array of utensils make cooking a pleasure.

First Prize

MY kitchen is full of useful gadgets. My favourite one is the plate-rack over the sink, consisting of two shelves one above the other, each with nine slots for plates arranged parallel to the wall side by side in three groups of three. The first plate rests against the wall, the second on the first, and so on. A removable metal tray catches the drips and discharges them into the sink. The advantage of this kind of rack over the more usual wire slot type is that everything from cups to vegetable dishes, saucepans to jugs can be dried there, saving time and teatowels thereby when one is single-handed.

Next in usefulness are the two sliding shelves under the high bench in front of the window. Here I keep all my groceries in small tins on the top shelf, in 7lb honey tins on the second, and such items as flour, sugar, rolled oats, etc., in oil tins (petrol tin size) on the floor underneath. All the lids of the tins are neatly painted white so that the adhesive paper labels will stick tight (they so often come off ordinary lids). The contents of the various tins are printed on the labels in waterproof Indian ink. When either of the shelves is pulled out the whereabouts of each ingredient is shown at a glance and there is no hunting about in dark corners looking for the baking powder.

To prevent burnt fingers my saucepan lids are fitted with wooden spring clothes-pegs and when not in use they are kept behind horizontal wires fastened one inch out from inside the saucepan cupboard door. Half a wooden clothes-peg makes an excellent pot-scraper, also. The sink is in a dark place and a two-way switch from the centre light-socket with a flex and bulb attached to hang close by helps to make washing-up easier. The flex is movable and can be used to light any other part of the room when required.

Cups and jugs all hang in two rows on hooks screwed underneath a high shelf, thus saving much cupboard space. I also have one long narrow shelf above the main one for keeping small jam dishes and cruets. My best-loved cupboard is built round the high-pressure cylinder and has slatted shelves to allow as much heat as possible to reach the clothes which are airing. A folded blanket placed round the cylinder keeps the water hot much longer than if no covering was there. I also have three rods hung on separate pulleys from the ceiling and these can be utilised for the drying of clothes in addition to the hot water cupboard.

Inlaid lino on benches and table saves much scrubbing, and clean bran sacks serve as floor mats and are easily washed. The table has drawers which has separate compartments for each kind of tool. A large square of strong material hangs on the wall and has pockets machined on to hold my recipe books. And last, but not least, the sink taps have old rubber milking inflations cut short and wired on to prevent splashes and save the china from being chipped.—**"Helen," Winchester.**

Competitions

JULY

A reminder to you all that the current competition closes on July 15. So delve deep into your memories, all of you, so that you can make a contribution on the subject:

"A Change which Marked a Turning-point in my Life."

AUGUST

On those unpleasant days when things go wrong and depression enfolds you like a gloomy cloud what do you do to regain your normal cheeriness? Some women try a new hat or a hair-do; some prefer a film or a book by way of distraction, while others benefit by the tonic effect of gardening or rearranging the living-room furniture. Write and tell me what is *your* remedy.

"A CURE FOR THE BLUES."

The first prize is 10/- and the second 5/-, and letters must reach me not later than August 15.

"MARY,"
C/o. "Journal of Agriculture,"
P.O. Box 3004, Wellington.

Second Prize (Equal)

THERE is one maxim which has helped me more than any of my gadgets and that is: "A place for everything and everything in its place." To me nothing is more irritating than to watch someone searching for an article which has become part of an untidy collection in a drawer or cupboard and is sure to be at the bottom. I am fortunate in having a small pantry leading from the kitchen and just a few inches away from the sink bench. On what was once a blank wall I screwed in dozens of cup hooks underneath a narrow shelf erected for the purpose. Each gadget has its own hook and I can reach for anything with a minimum of effort. First of all there is a wooden rack with rows of holes containing wooden spoons in all sizes. Then just past the potato chipper and moulinette food grinder is the carved rolling pin for marking shortbread into squares, each bearing the figure of a boat, bird, fish, or similar design. Next comes a gadget consisting of six fine wires bent to a wooden handle in the form of a D. The wires are for cutting the shortening into flour, when making pastry, thus keeping the mixture free from the heat of the hands and the hands from contact with the flour.

I also have an egg-slicer, fruit and vegetable saws, a serrated tomato-slicer, a butter curler, and grapefruit and orange peelers. Alongside the electric cake-mixer is the flour-sifter, an improvement on the local type. It has a double handle with a spring

TAKE BEAUTY IN YOUR STRIDE

Take beauty in your stride by walking, sitting, bending with the ideal way fixed firmly in your mind.

Especially watch that bend! Curving your spine and slumping your shoulders every time can put a crick in your back, wear you down, fag you to death—because it cramps the organs of chest and abdomen, restricts breathing and digestion.

But... bend to your tasks with a straight back, using the natural 'hinge' at the hips; stand, walk, sit with shoulders and head beautifully balanced on a straight spine, rear tucked under—and what a difference! You don't tire so. You work longer and finish fresher! And once you've made good posture a habit, you've done a lot to improve your figure, your poise, your vitality, your health. Acquire beauty while you work, and duty is *not* so dull!

Published by Berlei in the interests of your better poise... your better carriage... your better figure... your better health.

Berlei knows that right posture begins with the right foundation. And your Berlei is made in keeping with scientific knowledge to provide your figure with the support and encouragement for correct posture. Berlei therefore urges you to persist, in spite of shortages, until you get that accurately fitting Berlei which the Berlei Type Indicator says is yours, and yours alone.

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TRUE-TO-TYPE FOUNDATIONS

which on being gripped and released works the flour down through three layers of gauze. It can also be held in the left hand, leaving the other free. I have a glass rolling-pin which I fill with iced water when I use it for pastry and a wooden rolling-pin with revolving handles. Having collected a large number of glass coffee jars with corrugated sides I enamelled the lids to match all the gadget handles and knobs, and the jars are handy for groceries, such as rice, cocoa, barley, etc. My most-used gadget is the large tea-silo—one turn of the handle (which is fastened by a spring) releases exactly one teaspoonful of tea, thus doing away with guesswork and waste. **—"E.G.G.", Manurewa.**

Second Prize (Equal)

ONE of my "implements" in the kitchen is a steel skewer, which by accident turned into a valued gadget. Someone had bent the tip, but as I was busy it was not straightened and since then I have found it extremely useful for getting corks out of bottles, untying knots, etc., and it is a great improvement on the original.

I invented No. 2 myself, after trying many methods of airing clothes. I took down the clothes prop and with an old chair each end (boxes would also do) I placed it on the concrete path alongside the sunny kitchen wall. When the clothes are aired the prop goes back to the line and the chairs inside, and no clothes horse is needed. No. 3 is a broken clothes-peg, and is the best pot scraper I have seen. It improves with use as the end becomes furry like a wee brush. Small son thought of No. 4—a cardboard clock face painted green and having movable hands to mark the time when the cake will be cooked. It is a boon to a dreamer who always forgets! A friend's soap-dish gave me the idea for No. 5. It consists of a metal bottle cap pressed into one side of the soap, keeping it high and dry and making it last much longer.

No. 6, however, is the masterpiece, invented by "Himself": piece of tin about 8 in. by 4 in., corners rounded, bent to an angle across the middle (as if partly folded), ½ in. strip cut each end up to the angle and bent the other way to form hooks. This is popped over the hole above the ash-pan, the two hooks gripping the edge, the rest of the bent part being inside. It is completed by a nut in the centre for a handle, and a coat of black-lead. Originally intended for use when the fire smoked, I find it good when the fuel is sparky and it is marvellous for keeping the fire in for hours. I put on some wood, close all the dampers, and put on the gadget. I remove it when the fire is needed again, open the dampers, and away goes the fire instead of being dead out.—**"Mary Marie," Halcombe.**

MY most useful gadget is a small stepladder stool, comfortably high for a seat when ironing, etc., yet it slips easily under the table when not in use. Reversed, it is a small step-ladder of two steps to reach into cupboards, etc. I made it myself and many people have copied it and even sent carpenters to copy it for them.—**"S.P.", Christchurch.**

A WASH-DAY gadget is a peg bag attached to the line by means of a loop of wire which can be hung over the line and swung along as the clothes are being pegged out, and it is always on hand for depositing the pegs in when bringing in the dry clothes. After the lines are clear the bag can be lifted off the line and kept in the wash-house till next required. **—"Thrifty," Otorohanga.**

IT IS a good idea to have a rack beside your stove and keep a set of spoons and forks hanging there, ready to use for testing your cooking. It saves rushing to the knife-box for a tool before one can try whether the meat is cooked or the potatoes ready, and you can make use of your oldest cutlery for this purpose.—**"M.", Feilding.**

THE ELASTIC PROBLEM.

PERHAPS readers would care to know how I solved the elastic problem. Take an ordinary rubber ring used for a quart-size preserving jar and cut on the slope from the outside edge and continue till you have been round twice. This will result in a narrow strip of tough elastic. It will even boil, as I have proved! You must join it by knotting the ends together, otherwise stitching is inclined to tear out.—**E.B.**

DELICIOUS CAKES, PIKELETS, PUDDINGS without EGGS!
DO NOT USE BAKING POWDER with CAKE POWDER
EDMONDS
ACTO
COLOURED
CAKE
Use about 1 tablespoon of golden syrup for each egg left out or in some cases a similar quantity of fresh milk.
Reduce sugar by 1 oz. for each tablespoon of golden syrup used. Put in 1½ teaspoons Cake Powder instead of each teaspoon of Baking Powder stipulated.
A Product of
T. J. EDMONDS LTD.
25.4A

"I would like first to congratulate you on its excellence", says one cooking demonstrator of the new Phosphate Baking Powders. "I have made extensive experiments and find that it does a most satisfactory job without any of the harsh taste which for so long has characterised goods dependent on baking powder for leavening".

This test was conducted on a typical modern phosphate baking powder.

The 25 other N.Z. cookery experts who were asked to test the new phosphate baking powders praised them with the same enthusiasm as the one quoted above. Their unanimous opinion was that they ensure perfect texture, aeration, keeping qualities and taste.

Today when you buy your usual brand of Baking Powder you obtain a perfected product which is based upon the new miraculous rising agent called Food Phosphate. For your own protection look on the reverse side of the label and if the word Phosphates is included you have a Baking Powder which supersedes any you have ever used before.

THE PRICELESS HEALTH INGREDIENT— PHOSPHATE

Pre-war baking powders conferred no benefit other than aeration. Phosphate baking powders supply phosphate, which is so essential for nerves, teeth, bones and general bodily tone. Phosphate is sadly lacking in N.Z. soils and foods. How doubly valuable, then, is the discovery of Pure Food Phosphates.

Pure Food Phosphate for baking powder manufacture is a product of Albright & Wilson, and is distributed in N.Z. by Imperial Chemical Industries (N.Z.) Ltd., 16 The Terrace, Wellington.

"Many a Mickle"

I EXPECT you are all familiar with the old Scotch adage, "Many a mickle makes a muckle." It is rather apt, as sayings go, particularly when one applies it to personal things, for conscientious attention to the little details so necessary to good grooming has appreciable results in the long run.

TAKE your hands, for instance. How often have you surveyed them with a rueful air when you have been asked to a party or some such function at which you wish to appear at your best, and after an unsuccessful effort to eradicate the trace of weeks—and sometimes months—of neglect, you go off to the festivity knowing that your appearance is marred by what the advertisements call "housework hands"? If only I had used a lemon as often as the vegetable parer—if only I had bothered to look for my gloves before I started cleaning the stove—if only I had remembered to dig my nails into a cake of soap whenever I started on weeding and planting jobs in the garden, you mourn. Well, it is not too late to make a beginning even now. Keep half a lemon face down on a saucer next to your kitchen knife and remove those ugly stains caused by peeling fruit and vegetables before they have a chance to engrain your fingers. Choose a reliable brand of emollient and make a place for it above the sink so that rubbing some in every time you finish the dishes becomes just as much a habit as spreading the tea-towels to dry. If your hands do not improve after a period of this kindly treatment and the skin remains rough and flaky you would be wise to consult your chemist. Maybe your system is short of vitamin D, in which case you will need a special prescription in hand-creams, probably accompanied by a course of calcium tablets and an increase in your consumption of greens. Incidentally the latter items work wonders in warding off winter chilblains.

Soap and water play a leading part in complexion care, but don't forget that cleansing milk and toning lotions have their merits, also. How can you expect to keep your face soft and smooth-textured if your use of nourishing cream is confined to spasmodic applications? There are very few women who do not benefit by nightly massage with a skin food. It does not need to be a lengthy process—five minutes is sufficient—but it must be regular. And how many of you follow the advice mothers gave their daughters in the days when long hair was considered to be a woman's "crowning glory"?—one hundred strokes with the brush daily. You are particular about your hair style, you do not grudge the hours spent in obtaining a "perm," yet you will not bother to spend that little bit of extra time on the brushing which would give your locks a shining lustre that no hair-dressing preparation can equal.

And now to devote a portion of space to that important adjunct of feminine beauty, clothes! If your budget is limited and you are forced to make your topcoat do yet another season, why not hunt round for some pieces of fur to make a cosy muff-bag and trim a hat? Or should this prove unobtainable what about a purse and flower buttonhole and gloves in vivid-coloured felt?—practical as well as pretty. Your longing for a new suit may have no possibility of fulfilment, but a new blouse and a quaint fob ornament will do much to remove that dowdy feeling when you don your much-worn tailleur. If hats are your bugbear and you do not belong to the "bandeau brigade" it is a good idea to crochet yourself a snood. This is a decidedly becoming fashion and ideal for keeping your coiffure in place. A fresh set of buttons and some decorative braid will revive a not-so-young woollen frock and aided by a matching cardigan will often prolong its life indefinitely. Shed your despondency over the lack of new garments in your wardrobe and concentrate instead on accessories which will preserve your reputation for chic.

Lastly, there is the problem of relaxation. In these work-filled days women are often too busy to do more than glance at the headlines, let alone make time for serious reading or any other hobby. Yet relaxation is essential if you are to keep up your efficiency. If you intersperse your work periods with short intervals for rest you will be surprised at the difference in your well-being. If you are very tired it would be better at first to lie down for those few moments and free your mind from all thought of the job on hand. Later when the increase in your energy becomes apparent you can relax in a different way—brush up those forgotten accomplishments and indulge your yen for French or free verse or fine embroidery. You may not attain perfection in your chosen subject, but at least your mind will be stimulated by the all-too-brief diversion and you will go back to your tasks refreshed and invigorated and with your morale keyed to concert pitch, which is no small achievement in these critical times.

One last glance in the mirror at gleaming hair and becoming make-up and Metro-Goldwyn-Mayer actress Mary Howard, in her white taffeta gown with its red velvet bows marching down the front, is ready for the party. She looks as if she has just stepped out of a band-box, which is the essence of good grooming.

Birch Trees

Tonight is white,
The moon is high,
Our birch trees lean
Against the sky.
The heavy winds
Have blown away
Each little leaf
Of silver grey.
Oh, lovely trees
As white as wool,
This moonlight makes
You beautiful.

The H.W. Plan Promises the Best Solution for Postwar Problems

Talk about theories and "isms" all you please. Discuss orthodox and unorthodox methods of finance as much as you like . . . but, in all the plans for a brave new world, there's one that must work . . . that's the H.W. Plan. And "H.W." stands for Hard Work.

The good old H.W. has succeeded. Dickens walked ten miles to check the furniture of a room he was writing a story about. Edison tried over a thousand materials before he thought of carbonised thread for the filament of his lamp. Mitchell drew hundreds of sets of plans before the Spitfire hurtled through the air. General Montgomery studied every small detail of attack before he pressed the button for his African victories. All these men followed their own H.W. Plan.

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Mary's at - Home -

A GADGET I admired in a friend's home is a salt-bin let into the wall above the stove. A piece about 8 in. by 4 in. had been cut out of the wall and the lower part hinged to the wall, the hinges being on the inside, the salt-bin being made on the same principle as a tilting flour-bin. A half turn of the outer knob, a slight pull, and there was the salt ready to hand. Another gadget is for towels. It consisted of a wooden block 8 in. long by 1 in. wide which was screwed on to the wall and holds a 4 in. length of dowelling acting as a pivot for 4 pegs 14 in. long, one peg above the other. I made towels 14 in. square, bound them with scraps of print, added loops, and hung them on a peg. These are much easier to launder than a roller-towel. The tea-towel hangs on another peg and is pushed to the side of the pivot and the dish-cloth dries on another peg, and there is a spare peg on which to hang anything else one wishes to have handy.—**"Gracie," Manawatu.**

WHAT can be handier for a housewife than a kitchen tidy with a small side pedal connected to a shaft inside so that it does not matter if both hands are full since with one touch of the foot up goes the lid. Drawers which are apt to pull out too far and cause breakages should have red lines painted along the sides to show when they have been pulled out almost to their limit.

To crack walnuts without my fingers getting bruised and the shells flying everywhere I drive two nails into a small block of wood and put a wide rubber band around them, then slip the walnut within the band and a light tap with the hammer does the rest. A wire cake cooler is the main item necessary for the removal of stems from gooseberries and other small fruits when one is in a hurry. Choose a box which is not too big, remove the bottom and fill it with the berries, and then slide the box back and forth over the wire cooler.

A mask is a great help in decorating iced biscuits, etc., with coloured sugar. To make one draw on cardboard a star or crescent moon or animal or whatever shape you desire, cut it out (leaving a suitable length of cardboard to serve as a handle), and hold it over the biscuit and apply the sugar by sifting it from a salt shaker.—**"Sunny Sal," Southland.**

I THINK you will enjoy these two verses that mean so much to me. They tell very effectively how much depends on each one of us these days:

"It ain't no good a-wishing
And sitting down to wait,
God provides the fishing,
And we must find the bait."

The second one is called "Thoughful Verse":

"The Lord gave us two ends to use,
One to think with, one to sit with.
The war depends on which we choose
Heads we win, tails we lose!"

—Roundabout, King Country.

MY greatest loss is the leisure time to spend playing with my babies, taking them to paddle in the river and play in the sand, to ramble in the bush or spend a day with neighbours where they could make playmates of other little ones of their own age. Also, I miss the kindly visitor who before the war had time to call and say, "I'll stay and mind the children this evening while you two go to church together." There is no opportunity to go out together now that there is no one to leave in charge at home, but perhaps we are learning a lesson in greater contentment.—**Mrs. Jay, Nelson.**

I FIND a pair of folding steps most useful. About two feet high and light to carry about they are very convenient for getting up to the shelves. They are far safer and easier to use than a chair and they can also be used as a seat when one is working at a high bench. Another advantage is that when folded they can be hung up or put away in a cupboard. I also find a "jam stirrer" very handy. It is made from a piece of wood 16 in. long and 2 in. by ¼ in. at the base, and tapering to a small round knob at the top in which is screwed an eyelet for hanging it on a hook. It has a baby sister in the form of another piece of wood 10 in. long and ½ in. square at the top and tapering to ⅛ in. at the bottom. I use it when preserving to push down among the fruit or vegetables to let the air bubbles come up.—**"Effie," Murchison.**

TWO hitherto vacant drawers of my sewing machine are now occupied by tobacco tins, each one bearing on the lid a clearly marked label. Rubber rings, pins, needles, domes, beads, buttons of various kinds, fuse wire, and so on down the list of useful trifles, all separately housed. In the back shed my husband has a low shelf holding another row of flat tins, where he can find the wanted screw, nail, or tack at a moment's notice. I can recommend this arrangement as an excellent saver of time and patience.—**"Wairakei," New Plymouth.**

TO take the place of a marble slab for pastry making take an old linen cloth and make a cover free from wrinkles and fitting the baking board. Then make a tubular cover to fit tight over the body of the rolling-pin. These cloth coverings save a lot of the extra flour dusted on when rolling out pastry.

If your steamer is worn out, take a saucepan with a deep lid and place the food to be steamed in the lid, tying all firmly with a thin tea-towel or butter muslin and bringing the ends round to fasten on the lid-handle. Then half-fill the saucepan with water and put on the lid and steam in the usual way.—**"E.G.G.", Manurewa.**

Courage is generosity of the highest order, for the brave are prodigal of the most precious things.—Colton.

Roads

I love the roads that wind about the world,
The great high roads that lead from town to town,
The climbing ones that round the hills have curled,
The long ones that go gently up and down.

I love all roads, our steps are ever led
To seek far greater things beyond their bends;
They promise revelation far ahead,
And magic cities where their journey ends.

And O! I love the little paths and lanes,
That lead to hidden spots by brook and hill,
Covering earth's bosom like a net of veins,
Beginning nowhere, ending where they will.

What joys they bear, what burdens carry by,
The roads of earth, hewn out by men's strong need,
Their dust goes up like incense to the sky,
And calls to us to follow where they lead.

I think that when my spirit, breaking free,
Awakes at last, to find its own abode,
Most lovely and familiar I shall see
Winding to where a welcome waits—a road.

I AM very interested in spinning and have an attachment for my sewing-machine which spins very good wool. Now that the rush of work is over and the evenings are drawing in I hope to do quite a lot of spinning. I have gathered up several dark fleeces from the shearing shed, besides a nice white one from my pet lamb of last year. Spinning is a very fascinating pastime and soothing to the nerves when one has once mastered the art. It is just a matter of patience and perseverance until one has got the knack.—**Effie.**

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I DO enjoy your At Home — those little bits and pieces from our country women have such a bright note and show the fine sense of humour and the courage they possess. Katrina's story about the "dress-baskets" and the Lord's Prayer reminds me of when I was very small and wore stays. Sometimes at church the congregation sang "It is stage by stage to the golden age," and I joined in at the top of my voice, "It is stays by stays," etc. What ideas children get! I have just had a dream come true, and a "house" dream, too. Mine is an addition and I have watched it grow inch by inch. What a thrill I had after months of waiting for the builders (and **years** of waiting before that) to see the big lorry pull up with timber and carpenters on it, and every night when the hammering ceased it was fun to inspect the day's progress,

WISHES

These things I wish you for our friendship's sake—
A kind, old, lazy chair; a courtly cat
To rub against your knees;
Shelves of well-chosen books—
I wish you these.

I wish you friends whose wisdom makes them kind—
Well-leisured friends to share your evening's peace,
Friends who can season knowledge with a laugh;
A hedge of lavender, a patch of thyme;
A damask rosebush and a hive of bees;
And cabbages that hold the morning dew;
A blackbird in the orchard boughs, all these
And—God bless you. . . .

—Winifred M. Letts.

and then, when all was finished, to move into the new portion. The moving process is not yet complete, but we are getting there and although carpets and lots of other household comforts are not available just now it is lovely to be able to spread one's wings in a larger space and look forward to the days when one can purchase the frills and fancies that help make a home and cheer a woman's heart.—**Hopewell.**

NONE of us goes through life without meeting at some time difficulties and perplexities and sorrows of some kind or other. If we have faith and trust we can meet these troubles with an inward calm which helps us to come through knowing that all will be well. Nature gives us food for thought in many ways, for so many lessons of patience and hope can be worked out amongst the flowers in our gardens. We learn that no matter how bleak the winter, spring never fails to return.—**Eileen Alannah.**

Mary's Mixing Bowl

Meatless Meals

MEAT rationing should present few problems to the housewife who has learned the value of legumes, nuts, milk, eggs and cheese as substitutes for meat. They are all rich in proteins and can be used in place of flesh foods without in any way impairing the diet. The protective properties of the various mineral salts contained in vegetables and salads make these articles particularly suitable for augmenting the meat allowance. You will find the following recipes of assistance when you are planning meatless meals:—

CROQUETTES.

One cup mixed nuts, 1 cup raw grated carrot, 1½ cups mashed potato, 1 cup raw grated turnip, 1 onion, ½ teaspoon celery salt, ½ teaspoon chopped mixed herbs, 1 egg, breadcrumbs.

Chop the nuts as finely as possible, add the grated raw carrot and turnip, mashed potato, chopped onion and seasoning, and mix them together with a beaten egg. Shape them into croquettes, roll them in breadcrumbs and bake in a moderate oven till brown.

PEA PIE.

1½ lb. split peas, 1 onion, 1 oz. butter, parsley, salt, thyme, 6 oz. breadcrumbs.

Soak the peas overnight and cook till tender. Put them through a sieve and add salt to taste. Melt the butter and mix it with the breadcrumbs, chopped onion and thyme and parsley. Place half the peas in a well-buttered pie-dish, spread the breadcrumb seasoning over this, and then add the remainder of the peas. Dot with butter and bake in a medium oven.

SCRAMBLED POTATOES.

1 cup cooked potatoes, 1 egg, salt and pepper, parsley, 1 rasher of bacon.

Chop the cooked potatoes into small pieces. Cut the bacon into half a dozen sections and fry till crisp. Beat the egg well, add the potatoes, salt and pepper, and bacon, and cook over a gentle heat till the mixture thickens. Serve on hot, buttered toast and sprinkle liberally with chopped parsley.

SCALLOPED ONIONS.

¼ cup butter, 2 cups breadcrumbs, 6 onions, salt and pepper, 1½ cups milk.

Peel and slice the onions into rings about one quarter inch in thickness. Melt the butter and add it to the breadcrumbs. Grease a casserole and place in it alternate layers of onions and breadcrumbs, seasoning each layer, till all the onions are used. Finish with a topping of breadcrumbs, pour over 1½ cups of milk, cover the dish and cook in a moderate oven for ¾ hour. Then uncover and finish baking for another ¼ hour.

BACON AND APPLE PUDDING.

1 cup suet, 2 cups flour, bacon, apples, 1 onion, seasoning, parsley, sage and thyme, 1 teaspoon baking powder.

Sift the flour, add the chopped suet, baking powder, and seasoning, moisten with cold water, and roll out like pastry. Place on this the sliced apples, bacon, finely-chopped parsley, sage and thyme, roll up like a jam roll and tie in a pudding cloth. Boil for two hours.

LENTIL MOULD.

1 onion, 1½ cups lentils, 1 cup rice, 1 teaspoon salt, knob of butter, 1 tablespoon chopped parsley, breadcrumbs.

Wash the rice and lentils well, add the onion grated, and cook together in sufficient water till soft. Turn the mixture into a buttered basin, add the salt, butter and parsley, enough breadcrumbs for thickening, and steam for 1½ hours. Leave to cool, turn out and serve with salad.

MACARONI CHEESE.

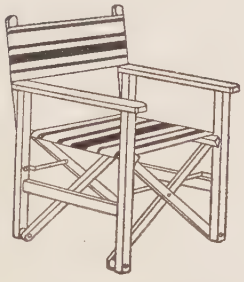
4 oz. macaroni, 3 oz. grated cheese, 1 cup white sauce, salt and pepper, ½ cup breadcrumbs, ½ oz. butter.

Cook the macaroni in boiling salted water till tender. Drain it and add it with the cheese and salt and pepper to the white sauce. Place in a buttered pie-dish, sprinkle with breadcrumbs, and dot with the butter. Bake for 25 minutes in a medium oven. (If tomatoes are available this dish is delicious with sliced tomatoes added to the topping of breadcrumbs or the sauce can be made with tomato pulp instead of milk.)

MOCK CUTLETS.

1 grated onion, 1 lb. split peas, 1 lb. rice, salt.

Soak the peas overnight and cook the peas and rice separately. Rub the



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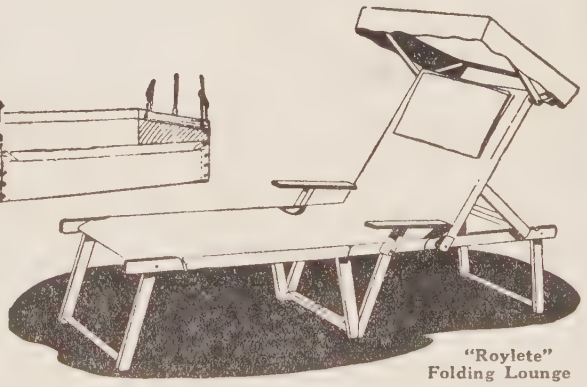

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peas through a sieve and add them to the rice with salt to taste and the grated onions. Shape into cutlets and fry in deep fat till golden brown. Drain well before serving.

SAVOURY PANCAKES.

4 oz. flour, ½ teaspoon salt, 1 egg, 1 cup milk, ½ teaspoon baking powder, 1 teaspoon curry powder, 1 tablespoon finely chopped onion, cooked rice and vegetable filling.

Sift the flour, add the salt, onion, and curry powder, drop in the whole egg, and add the milk gradually, working out the lumps with a wooden spoon. Beat the mixture well and add the baking powder last. If possible, cover the basin and leave it to stand for an hour. Rub the pan with melted dripping and pour in sufficient of the mixture to cover the surface. Cook quickly till set and light brown, then turn with a fish slice or broad knife and brown the other side. Fill with cooked rice and any vegetable mixture desired; roll and heat thoroughly before serving.

VEGETABLE SHAPE.

1 cup peas, 1 cup beans, 1 cup cauliflower, 6 carrots, ½ cup turnip, ½ cup potatoes, parsley, salt, 1 pint stock or vegetable water, 2 dessertspoons gelatine, 1 egg.

Cook the vegetables and dice them. Add seasoning, including chopped parsley and any other herbs desired. Dissolve the gelatine in the heated stock. Arrange slices of hard-boiled egg in a mould, add the peas and other vegetables, and pour over the gelatine stock. Leave to set and serve with lettuce.

SAVOURY RICE.

4 oz. rice, 4 oz. cheese, 1 oz. butter, 1 egg, 1 cup milk, salt and pepper.

Soak the rice for 12 hours. Cook well. Add to it the butter, 3 oz. of the cheese, half the egg, salt and pepper, and mix well. Place it in a buttered dish and then cover with the remaining egg and cheese, pour the milk over and sprinkle with nutmeg. Bake in a slow oven till brown.

CARROT TART.

Pastry: 4 oz. flour, ¼ teaspoon salt, 1 teaspoon baking powder, 4 oz. cooked mashed potato, 3 oz. fat.

Filling: 1 oz. butter, ½ oz. sugar, ¼ oz. salt, carrots, milk.

Make a pastry by rubbing the fat into the sifted flour, then adding the salt and baking powder and cutting in the potato lightly till the mixture forms a stiff dough. Roll out on a floured board and line a pie-plate and bake in the ordinary way. For the filling, cook the carrots and to ½ a pint of carrot water add ½ oz. sugar, ¼ oz. salt and 1 oz. butter. Put the carrots through a sieve, add the prepared liquid, using enough milk to make the mixture creamy. Pour into the baked pie-shell and place it in the oven to heat for 5-8 minutes before using.

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BEANS AND DUMPLINGS.

½ lb. haricot or lima beans, 3 carrots, 3 onions, meat extract, 8 oz. flour, 2½ oz. butter, 2 oz. cheese, thyme, milk, salt.

Soak the beans overnight and cook in 2 quarts of water with the carrots and onion till tender. Add 1 teaspoon meat extract for flavouring. Make the dumplings by mixing the flour, melted butter, grated cheese, thyme and salt to a stiff paste with a little milk. Drop them in spoonfuls into the bean soup and cook for about 20-25 minutes.

POTATO CAKES.

8 oz. cooked mashed potato, 4 oz. flour, 1 egg, 1 oz. butter, 1 teaspoon baking powder.

Rub the potatoes through a sieve. Sift the flour and baking powder and add to the potatoes. Pour the melted butter over the potato mixture and mix well with the beaten egg. Spread the dough to ½ in. thickness in a greased tin and bake in a hot oven 20-30 minutes. Cut into sections with a hot knife and serve spread with butter.

CELERY LOAF.

1 cup walnuts, 1 carrot, 1 onion, 1½ cups chopped celery, ½ cup raw spinach, 1 egg, 1½ cups breadcrumbs, knob of butter, ¾ cup milk, salt and pepper.

Chop the onion finely and brown in the butter. Chop the celery, walnuts, carrot and spinach, and add the onion, also the egg well beaten and mixed with the milk. Blend in the seasoning and breadcrumbs. Place the mixture in a greased loaf tin and bake in a moderate oven 50-60 minutes. Serve hot with white sauce.

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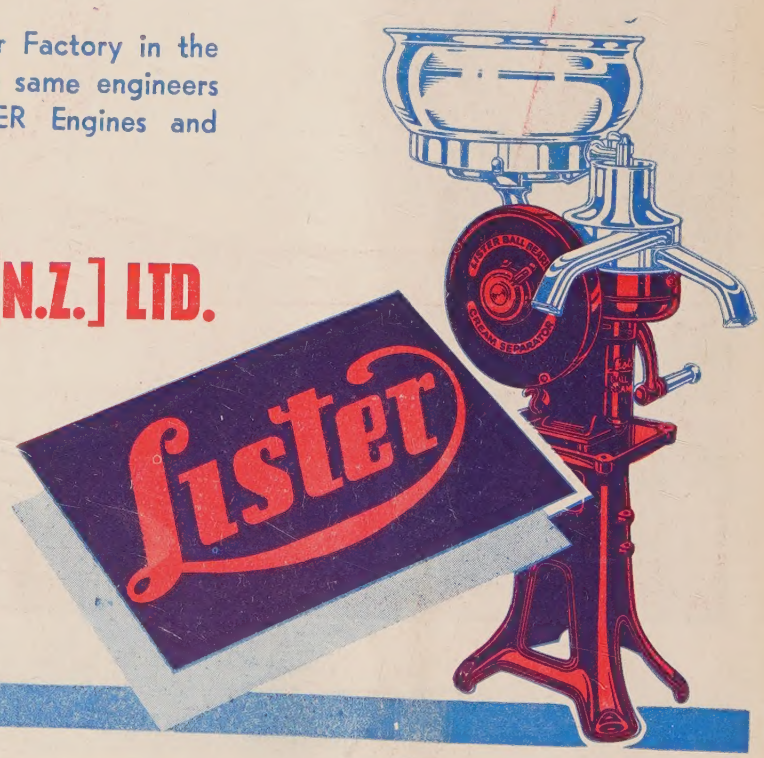

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